

NOTE BOOK.

Manuscript
Case
C7

Manuscripts, Northern Pacific R.R. Survey
Note book, by J. G. Cooper



J. G. Cooper M.D.

Actg. Asst. Surg. ~~U.S.A.~~
and Naturalist
Northern Pacific Railroad Survey

Commenced June 15th

1883

June 13th. Entered the mouth of Columbia River, after a passage of 20 days from New York omitting detentions on the Isthmus & at San Francisco. The appearance of this river is very different from what I had been led by descriptions to expect. Near Astoria the shores are low & gently rising into hills, densely covered by evergreen trees. As we go eastward the banks show much variety of form & structure, being sometimes low marshy meadows for 1 or 2 miles, then suddenly rising in perpendicular precipices to the height of 50 or 100 ft. so steeply as ~~would~~ make it very difficult to climb. The width of the river changes from 1, to 3 miles, in the wider portions, divided by islands of the same character as the banks, but covered (instead of by evergreens, by a luxuriant growth of deciduous trees, principally

The river is now very full of water from the melting of the snows on the mountains, so as to overflow its banks in many places and do much injury to the crops & buildings near by.

I noticed the white-headed eagle very abundant, but recognized no other animals etc. worth noting.

The day was throughout foggy & rainy without much wind, the direction of that being S.W. Toward night the fog began to clear away. June 14th Reached Portland on the Willamette about 8 o'clock.

This place is about 90 miles from the mouth of the Columbia, and is the principal town in Oregon containing now about 2000 inhab.

June 15th Walked across the neck of land formed by these rivers & was ferried over to Vancouver in Washington Territory, a station of U. S. troops & of the Henderson Bay Co. a few other persons living in the vicinity. Weather warm but not oppressive, sky clear no wind.

July 1st I have made several short excursions into the vicinity. The country is flat alluvial and covered with a dense forest of coniferous trees. I have observed many of the same species of plants and animals common in the Eastern States, besides many allied but not identical species. Strong birds are the white-headed eagle, common crow, Carolina dove, barn swallow, yellow-bird, ruffed grouse, black vulture? The raccoon appears to be the same, also the Virginia hare, silver mole, ground squirrel. A species of garter snake is the only one I have seen, and a large water tortoise like the *Emys picta* heads & frogs comprise the reptiles. Nearly everything, however appears to differ somewhat from the analogous species in the east, particularly among the plants so that I am afraid to give the same names to them, though I think that the influence of distance climate &c. is often too much overlooked in separating new species from those almost if not quite identical. This I see more & more as I examine the differences laid down by books and compare with living individuals.

Ft. Vancouver to

July 20th The train proceeded last night to a plain about 2½ miles from Vancouver. I encamped to wait for and to collect & trap glass. This plain is about one mile across and nearly circular in form, apparently due to the unfitness of the soil for the growth of trees (Spruce) which form a very sharply defined border around it. The vegetation on it consists of grasses principally with small flowering plants. I noticed in the woods *Sicyos Areganus* very common. It is said to be used by the Indians medicinally having a purgative property. Also *Berberis stenophylla* an ornamental plant the blue berries of which are eaten & used for preserves under the name of "Oregon grape" but Mr. Gibbs who has eaten them says they cause vomiting. The *Rubus cuneatus Occidentalis* & *spectabilis* are common and their fruit with other berries forms the chief food of the natives at this season. Obtained two Pine squirrels which were preserved male & female. The latter is more brightly colored beneath. *Epilobium angustifolium* & *Picea betulifolia*? & *Douglasii* are the most striking flowers now in bloom.

Calidais Prairie

July 21st Proceeded 3½ miles to the Calidais or 4th Prairie which is similar to the first in appearance but much larger being about 12 miles in circumference and nearly oval in form. Passed the 2nd & 3rd prairies both smaller but otherwise similar. The soil is a coarse gravel of diluvial formation with boulders of trap & granite scattered through them. Wheat grows well but not without careful cultivation. In low swampy parts a coarse species of *Carex* is the chief grass & is eaten readily by horses. Scattered Spruce trees dispersed in groups over the dry portions give the appearance of old cultivated grounds. The *Oenothera lachrymans* & *O. quadrivulva* with some *Solidago* & other *Compositae* are the only flowers I saw at this season. Obtained a garter snake differing from those common at Vancouver being light brown with a pale yellow dorsal line and small yellow spots along the sides. The ground everywhere is elevated & turned up into hillocks by the Rodent called here Gopher but very rarely seen in daylight. Near this camp are several anthills from 2 to 4 ft high formed of spruce leaves and paths lead from them in every direction.

worn an inch or two deep by the continual passing of myriads of the insects. They are less than $\frac{1}{4}$ inch long but make up for size by their immense numbers.

The day was unusually hot the thermometer rising to 99° at 5 P.M. which was the hottest period of the day.

July 22nd Weather continues extremely warm — the highest degree being today 89° . Walked with a gun about 8 miles but saw very few animals, the great heat having driven them to the coolest shades.

Obtained two snakes similar to that of yesterday except that they were of a black ground color instead of brown. Also the minute bird preserved in alcohol with the (*Regulus calendula*, young). Capt M. Clellan today started ahead with a corps of axemen and an escort to clear the way for the train.

July 23rd Walked with my gun for some miles around the camp but obtained no specimens. Notice the common sparrow hawk very abundant about the prairie. Heat still excessive thermometer up to 86° . A box of medical stores was lost today with the mule carrying it, probably stolen for the sake of the Brandy.

July 24th Started at 5 A.M. with Messrs. Eddings & Lewis to overtake Capt M. Clellan. For about 6 miles the path led through open woods with a moderate growth of underwood. Then came a prairie about 6 miles circumference where the Capt. had camped the first night and left a note for us. Crossing this we entered a forest of more immense growth than any I have yet seen many trees of *Abies Douglasii* & others being 10 to 12 ft in diameter. The latter being the least common than hitherto *A. Canadensis* replacing it. Saw also *Thuja gigantea* 30 to 40 ft high & a species of *Vaccinium* with red acid berries resembling cherries in taste & a very ornamental shrub. After traversing this wood for about 8 miles we reached a small stream with a narrow meadow along its banks where the Capt had encamped last night. A part of his men with the provisions were preparing to follow him he having gone on some hours before. After resting an hour we proceeded at 1 P.M. on his trail the course being northward for four miles through a "Brule" or burnt forest where the charred trunks ~~reached~~ 2 or 300 ft high like monuments of the catastrophe.

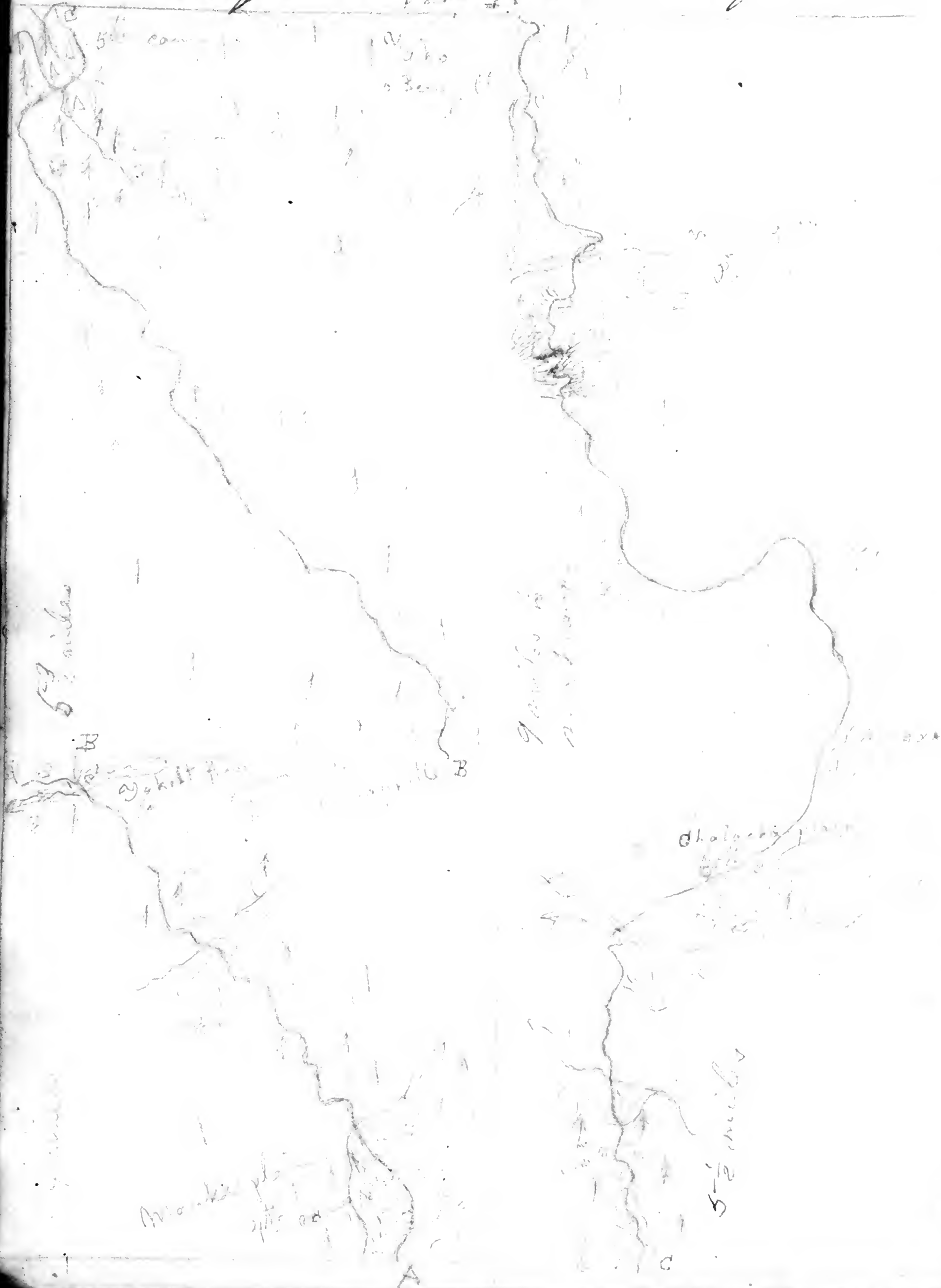
8
Crossing a beautiful mountain stream of a
bout 6 rods in width and icy cold, where I
saw trout swimming about my horse's feet;
we ascended gradually the side of a ridge
covered with trees & thick underbrush.
Passing through this for about 8 or 9 miles
we descended into a small prairie where we
found Capt McE. encamped. Noticed
on the way quantities of berries of the dif-
ferent species of *Rubus* *Uva Ursi* *Amelan-*
chier &c. Through the whole day saw no
animals except a few Ruffed grouse & wood
peckers. The heat was great especially
in the "Brules" where the sun beat on
us through the hottest part of the day while
the leafless trunks standing thick kept off
the wind which blew from the south.
Encamped with the Capt's party on the
"Makka" prairie 8 miles in circumference
covered thickly with *Spiraea* (sometimes or
Douglasii, which are almost the same)
Also a shrub called "Bear berry" in fruit.
Rosa cinnamomea *Crataegus sanguinea* &c.
The hills to the north rise steep from the
prairie and the lofty trees around it keep
off the wind making the air hot & still.
July 18th m. from Caliper's Prairie

9
July 20th Capt. McE. went at 7 A.M.
on the forward trail while Mr G. and
I returned toward the main party for
a supply of provisions to be forwarded.
After going about 1 mile we met them
coming on and again turned back reach-
ing the prairie about 4 P.M. Here we stay-
ed to await the arrival of the train which
having left the camp 20 miles back that
morning could not all reach here till
next day. The soil throughout this march
consists of coarse gravel & boulders of gran-
itic rock ^{or perhaps of gneiss, mica-schists} evidently of diluvial formation.
July 20th Remained all day at the prairie
because some pack saddles were broken
and the train delayed to repair.
The day was very hot and the atmos-
phere smoky from fires in the woods near
by. Collected nothing. Noticed humming
birds abundant about the camp apparent-
ly the common ruby throat. They have
been scarce near or over since my arri-
val there when there were more flow-
ers in bloom than now. Thermometer at
3 P.M. 94.5° *Epilobium angustifolium*
the "Willow herb" colors the whole country
with the hue of its purple flowers.

10 Mak-las to the
July 27th Again set out to follow Capt.
McClellan and found him at the "Yakolt"
Prairie $9\frac{1}{2}$ miles from the last camp.
The route for the first 4 miles was very
rough crossing two high hills & descending on
their north sides by precipitous paths nearly
100 ft. descent & at an angle of about 30°.
These hills are composed of basaltic frag-^(mostly)
ments mixed with mica schist & quartz. The ascent
of the south sides was in both cases grad-
ual the abrupt descent being towards the
north. In each valley was a stream the
first a mere brook the other a small river
called the "Yakolt" very picturesque at the
point of crossing. The route from this point
to the plains was through a young forest
chiefly of trees from 2 to 4 ft. in diameter with
a few large ones scattered among them as
if the ground had lately been a prairie & the
trees had grown up suddenly and all
together. The ground being nearly level &
little obstructed by logs or underbrush, it was
the pleasantest part of our route so far.
This march was performed in about 4 hours
walking our horses all the way and stopping
while at the river. Noticed on the way *Milvifolia*
leucophorum *Dicentra eximia* & *Panax horridum*.

Yakolt prairie 11
July 28th This prairie is
four miles long extending towards the south
and 2 miles wide. The Red fir is the most
common tree about here & is scattered in groups
over the surface along the bordering the Py-
rus rivularis *Amelanchier*, *Spiraea Douglasii*, which are now in fruit. *Cerasus*
mollis a bitter cherry not yet ripe. The ground is
covered with *Vaccinium cespitosum* a species
about 6 inches high with a blue berry. From which
the Indian name of the plain is derived.
Walked with Mrs. Gidding on the forward trail
about 4 miles to a small stream to catch some
trout of which the Indians have brought in some
from 8 in to 1 ft in length. Caught none. The nets
I have being useless for streams like this.
Caught some small crayfish of a species common
throughout the streams & branches of the Colum-
bia. It is when fresh of a brownish green color
smaller ones tinted with red & grows to a foot
in length. it is said to equal the lobster as food.
Saw on the way *Vaccinium ovalifolium* a blue
acid berry growing near the red fruited species
mentioned. The *Actaea aguta* is common through-
all these woods & bears white as well as
red fruit a fact not mentioned in *Fl. of B. C.*
Trillium grandiflorum is now in fruit.

Course from Markham to Cathlamet Cr.



July 30th Yesterday was busied with preparation about the camp & did not go out to collect. Obtained two striped snakes very similar to those caught at the last camp.

Today caught a species of Shrew which is preserved in alcohol. Also three lizards which I found under stones in a corner of the prairie but have not observed elsewhere. This plain seems to have been caused by fires as there are small mounds scattered over it, the remains of stumps & logs. Some of these prairies are due to the long continuance of water on them in the rainy season, preventing the growth of trees. Along the border of this prairie & on every elevation is a thick growth of Fern (*Pteris*) higher than a man's head & these places are completely undermined by Gophers their burrows resembling those of the marmot. On this prairie grows a species of Elder resembling the *S. Canadensis* in the corymbose white flowers but with more serrated & glabrous leaves the *S. glabra* of H. & A. mentioned as doubtful & with blue fruit.

14

Chalacha Plain - to

July 31st Walked through nearly the whole prairie in hope of finding some game or specimens but saw nothing except the remains of a skunk which had been devoured by a bird of prey, and the animals before mentioned. About 8 A.M. left this camp and at 11 o'clock reached the "Chalacha" or great plain which is about 5 miles from the last one. This is of an oval form and about 5 mile long by 2 wide, surrounded by high precipitous hills above which towers the snow-capped peak of St. Helens in a direction nearly northerly from the prairie. Here we remained through the day and night. Caught the snake mentioned under this date in the Index which appears to be of the same species obtained at Vancouver etc. The newts with it are peculiar from having gills or their rudiments and are said to be found much larger. The small fish with them seems to be the young of a trout. On the end of this prairie is a grove of alders the only species I have seen here, peculiar from being always mixed with evergreens which cover nearly the whole country. A mountain exactly conical stands at the N.E. end rising to the height of about 200 ft.

Cath-laputte River

15

Aug 1st Left the Chalacha prairie at 9 A.M. & travelled through a hilly country towards the north for several miles when we reached a steep sloping hill, & descended by a continuous declivity & an angle of about 45° for 500 ft. driving our animals before us. On the way one of the best mules got off the path & rolled down a steep ravine about 200 ft. breaking its back in the fall & losing its head of powder and tobacco. Noticed on the hill side a *Taxus* (Cew) in fruit. At the bottom of this mountain we were stopped by the Cath-laputte river here about 150 ft wide & very rapid, flowing over a bed of volcanic pebbles mostly porous lava & phosphoric conglomerate. Our horses forded this river without accident and we then continued on our course through a nearly dense forest to the prairie where we camped about 3 o'clock, having made about nine miles. The remarkable scarcity of game & of all animals must be noticed, our hunters having brought in nothing yet except a few hares & partridges. Small birds & animals are equally scarce, and my collections thus far have been small. * by the barometer. (10 m.

16 Cath-lapootle River to

Aug 2nd Left the Prairie at 9 $\frac{1}{2}$ A.M. and proceeded northeasterly for about 4 miles when we again struck the Cathlapootle river higher up than yesterday crossing. Here we halted for an hour & then following up its banks for a mile crossed it & camped on the east side in a grove of young spruce trees the ground being covered with the *Uva-Urai*, a shrub called *Mansinita* in *Calá* and small poplars. Before leaving camp I caught the six snakes described in the Index all being together in a bush. They seem to be of two species & each varies somewhat from age &c. The first species same as I obtained at Vancouver, the other new to me. After encamping Capt. M.C. caught some trout with the artificial fly one of which is preserved in alcohol. It is the only species I have seen here & attains a length of 18 inches. The young appear to differ in having black bars on the sides & red fins.

The soil traversed to day was a loose volcanic formation of sand & gravel with boulders of small size covering the river bank & bottom, consisting of porphyritic sandstone & quartz. Travelled 6 miles.

17

Aug 3rd To day made 8 miles through a region mostly burnt over recently & with a young growth of trees covering it. Encamped after crossing the river again on a small level surface about 20 ft. above the river, similar in character to that passed over yesterday. Collected nothing today. Noticed a species of *Sorbus* in fruit, the berries being orange color and larger than those growing in the Eastern states. It is not mentioned in *Fl. of B.C.* as native here.

Aug 4th Still continued along the course of the Cathlapootle in a direction about Northeast. Passed over a bed of porous lava cracked & raised in various directions, but could not see its source. It appeared to be comparatively recent, not supporting any old vegetation & being but little decayed, though of a soft material. Obtained three young flying squirrels preserved in alcohol. The mother was shot with a pistol ball, so badly torn as to be spoiled for preservation. It was much larger than the *S. volucella* & dark brown.

Obtained also two lizards & a Grouse (*Tetrao obscurus*) the first I have seen. (8 $\frac{1}{2}$ miles)

Aug 5th Passing a fork of the river we crossed its principal branch & began ascending a mountain, consisting of two terraces each about 50 ft. high & $\frac{1}{4}$ mile wide. Surmounted by a steep hill, which gave us a continuous ascent of 4000 ft. as indicated by the barometer. The summit was nearly level, and about 2 mile from the hill side we reached the camping ground in a little valley traversed by a brook of ice cold water. The hill was covered with a species of *Vaccinium* the fruit nearly as finely flavored as a grape, and the ground in many places carpeted by strawberry vine with ripe fruit of delicious flavor. Blue purplish yellow & white flowers adorned the hill sides and altogether this was one of the pleasantest camps since leaving Vancouver. Two Pines & a species of dense leaved spruce all very beautiful trees grow here, replacing to some extent the trees of the valley. Obtained here a salamander which was creeping through the undergrowth of the fir towards the brook. This species is said to be common in the lower country, & ~~found~~ - above Vancouver (6 $\frac{1}{4}$ miles

Aug 6th Left camp early & travelled easterly 9 $\frac{1}{4}$ miles to a small meadow full of excellent grass where we encamped. Most of the way led through a burnt forest with but little living vegetation, where there was scarcely any animal except striped squirrels & jays. The soil here uncovered by ashes consisted of porous basalt & pumice. During the evening two large cranes flew around the prairie desiring to light but were frightened away by the sight of our camp. Aug 7th It rained all day at intervals the first rainy day since we started. Remained at the prairie to allow the animals to recruit after their recent hard fare. Obtained no animals but saw some plants new to me among them a species of *Ceanothus* with a bright shining leaf (cutaneous). Aug 8th Travelled 6 miles to the "Chinquas" prairie a high plain mostly covered with young spruce ~~trunks~~. The hills around are almost all burnt over giving them a gray appearance from the dead trunks. Sky continues cloudy & P.M. a storm of hail & rain came on with a high wind & cold air. Saw some ducks in a small pond but could not get any.

Aug 9th Remained all day in this prairie. Obtained two striped squirrel which are very abundant on these hills the ground being full of their burrows. Also a pine squirrel similar to those preserved July 20th. From a hill near the camp had a fine view of Mts St Helens Flood & Adams overlooking the intervening country. Found on this hill several alpine plants a low spreading Juniper covering portions like a thick carpet. & giving a bluish hue. The grouse shot the 24th Aug. is very common here almost supplying our meals with provisions.

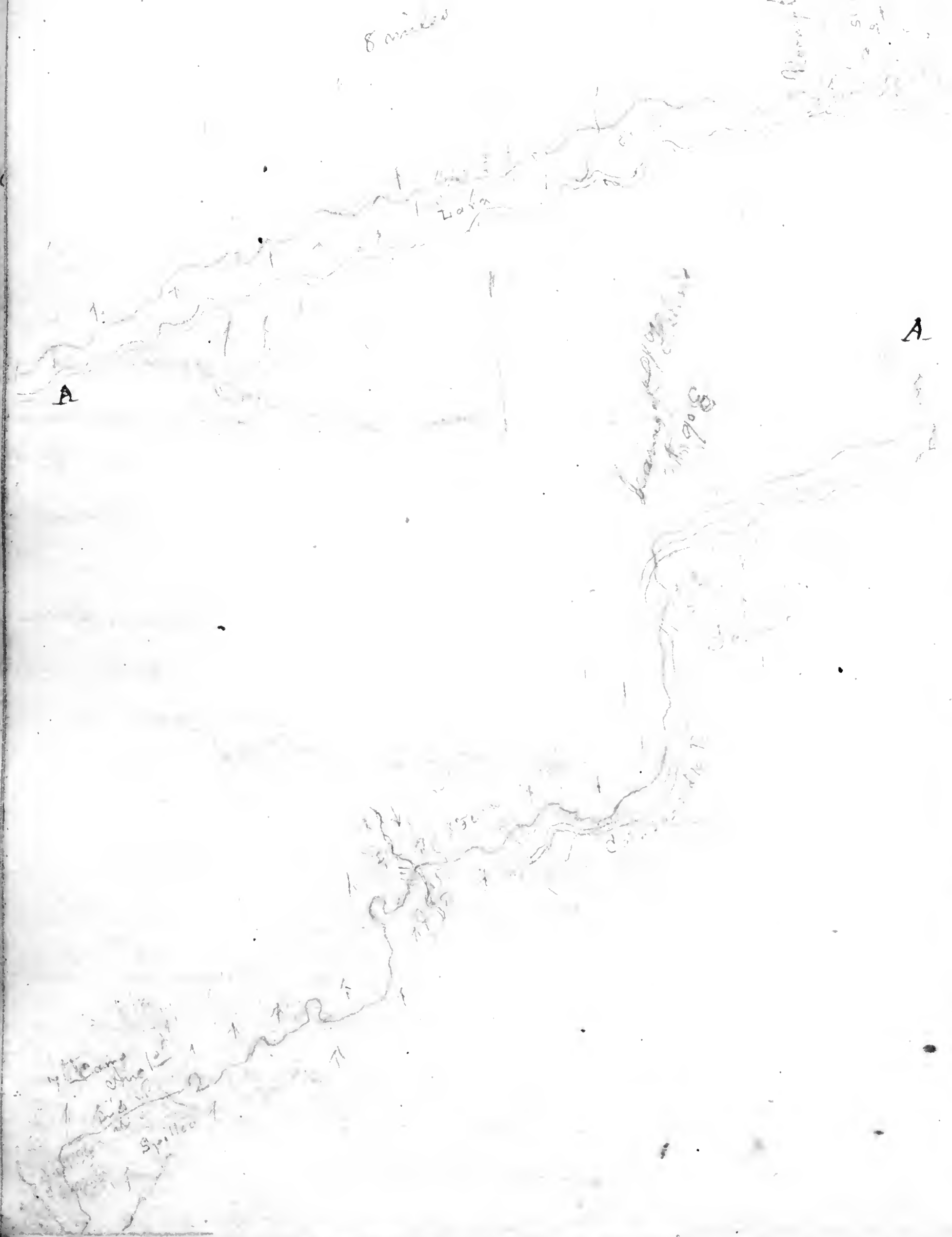
Aug 10th Ascended a hill much higher than that of yesterday being by the barometer 5077.74 ft above Vancouver. The snow peaks appear in all their magnificence. Mt. Adams being NNE of us, Mt. Rainier nearly north, St Helens NW & Flood & Jefferson SSE. The whole landscape is one of indescribable grandeur probably unequalled by any in America. Noticed at this height numerous birds as well as abundance of small insects. Many flowers are also in bloom. We formed a camp last night 70 in thick.

The route since the 1st mt. has been a gradual ascent towards the summit of this pass and the present is the highest point reached. The rocks have been all of volcanic origin with small pebbles in the beds of streams apparently produced wholly by causes now existing. Some beds of lava have been passed over all of basalt, though the fragments of older origin are often trachytic. In ascending a gradual disappearance of some plants is noticed and a substitution of others. *Chusquea formosa* has continued common up to this point. The three species of *Abies* composing the lower forests are here replaced to an extent by two others and by two species of *Pinus*. Oaks disappeared with the Cathlamet river and the maples are now very rarely seen. Looking toward the northeast from this point our future course is seen to descend into a valley along the east side of Mt. Adams. This is therefore the summit of the range in this direction. Being now about to enter a region probably little explored by botanists I shall commence collecting plants.

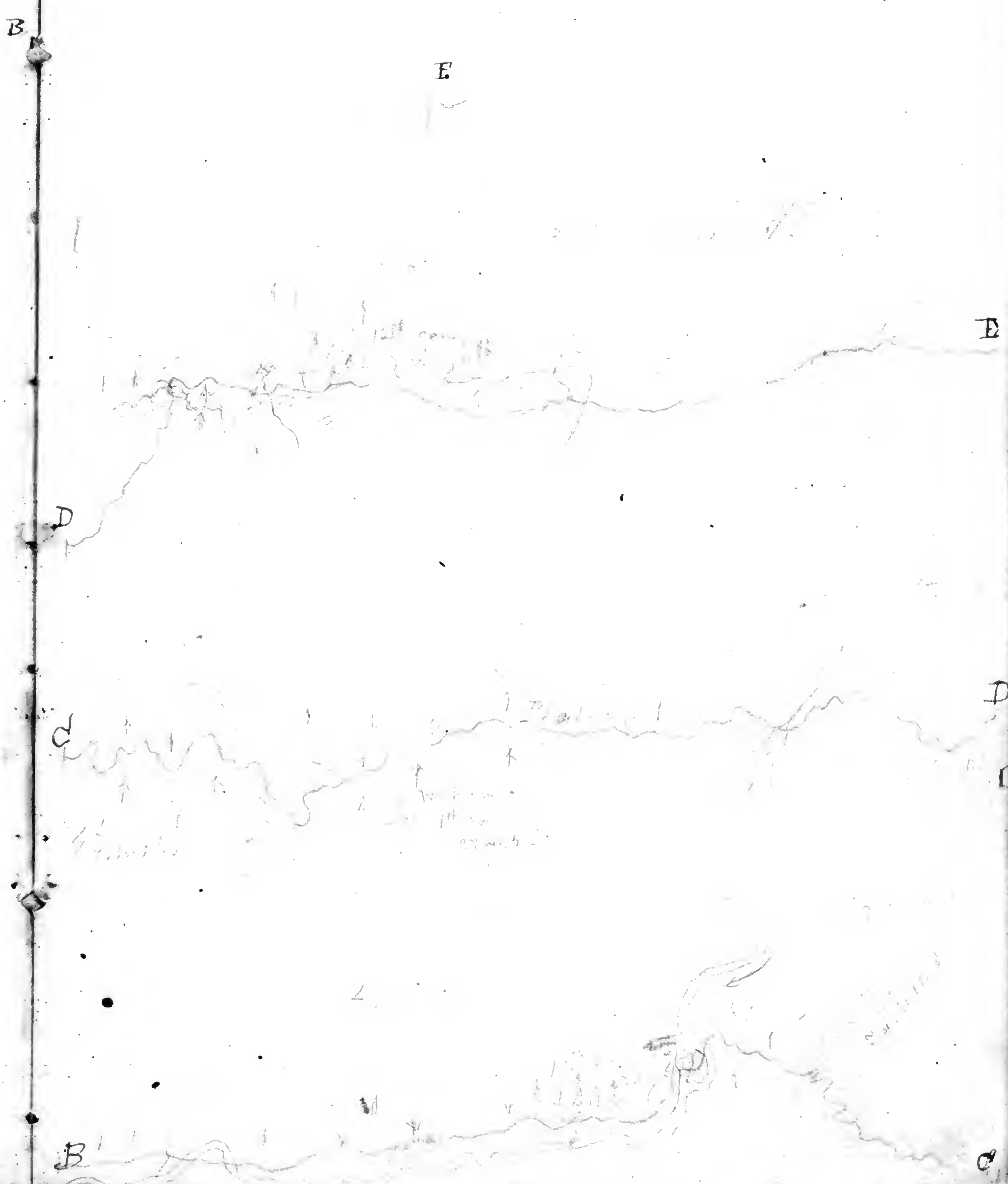
Aug 11th Leaving the prairie at 10^{1/2} AM we travelled north for about two hours. Through a tract of volcanic appearance formed of beds of lava of various ages very much cracked & broken up so that its general direction could not be ascertained. On the way we passed a small lake which at present appears to have no outlet, though there is a continual flow of water into it. Noticed on the way *Ceanothus velutinus* which is mentioned in Fl. of N. C. as found on "Bear River". It is a very ornamental shrub and has a pleasant fragrance. After passing the 1st two miles the wood became very open & of large pine trees standing 20 or 30 yds apart, the ground below being covered with grass and small shrubs. The scene resembled ornamental forest grounds more than wild uncultivated woods. About three miles before reaching camp we met with a series of caverns extending for a mile or more towards Mt. Adams & formed by the expansion of a lava current by steam in flowing over a river bed? A former layer of saltic lava formed the river bed and now partly forms the floor of this cavern. Silicious stalactites hang from the roof.

Encamped on the side of a brook which is said by the guide to be full of trout. Though I looked for them in vain here. Noticed the oak again at this place & many of the pines were of very large size, by no means equal to the spruces westward. Aug 12th Continued through the same level open woods for about three miles when we crossed a small river deep & stony bottom than the Cathlamet, and soon after ascended a steep hill about 300 ft. high, & continuing along its side for 6 miles reached a large prairie lying to the SE of Mt Adams where we encamped. Noticed on the way a species of striped squirrel or marmot which as large as the common kind, but could not get a good specimen. Found a species of *Paeonia* (Brownii?) around this prairie with ripe seed; the root is used by the Indians here to give their horses long wind. This prairie is about 10 miles in length and three wide containing a marshy lake and appears to be subject to overflow. Noticed several "Sand hill cranes" flying about here. At night the "Coyotes" made a doleful concert together with the wolves & owls. (8 1/2 miles

Along Catlapootte river to



Chickwass



26 Aug 13th Proceeded about 6 1/2 miles to the other end of the prairie and encamped by the side of a river about 20 feet wide. The outlet of the lake mentioned. A deer & tracks of elk were seen today but no game has yet been obtained. A Crane was shot, of which I preserved the head. The bald spot on the front is said to be constant in this species. A coyote was also shot but unfortunately not brought into camp. Found a curious *Aschideum*? plant on the border of this prairie in soil now very dry. It is preserved with those of Aug 12th. The garter snake preserved is of a kind apparently common here, saw also one of those with red spots. A large number of the species of crane shot was seen on this plain with some ducks. Both probably breed in these mountains, with geese and a species of Merganser. A large number of sparrow hawks frequent the plain & I noticed also the Marsh hawk - Meadow larks are also plenty & a species of Kingbird (the Tyrannid) * *Phalipoea comosa*. The & Co.

27 Aug 14th Made 1 1/2 mile through the same opening forest as before described. The ground being mostly level until reaching a hill where we descended to a stream about 2 rods wide & similar in appearance to those crossed on the other side of the mts. The banks were very steep & more than 200 ft high. Camped by the side of a small brook where I noticed a few small fish. Through the whole march I saw no animals except the common ground squirrel & a few ducks. Collected a few new plants. Aug 15th Proceeded about 9 1/2 miles through a similar country crossing 1 or 2 streams. The guide mistaking the way led us to the edge of a hill at least 200 ft high from which we overlooked a region of steep high mountains, almost perpendicular sides the peak of Mt. Rainier showing above them. This ravine being quite impassible we turned back in hopes of again striking the trail but after proceeding about a mile encamped by a brook side. Obtained no animals today this pine region being almost destitute of anything having life - Two deer were seen but the hunters got no game. The ground has everywhere a thick growth of grass & appears like good soil for grain.

Chickasaw to

Aug 16th Proceeding easterly for about a mile we again struck the trail & continued on for about five miles further through the same kind of forests when the pines began to be smaller & more scattered & the ground between bare & gravelly. Crossing the head of a deep ravine we entered the great desert extending between the Cascade and the Rocky Mountains & travelling on for about ten miles encamped by the side of a small river called the "Trinkoe". The surface of this country is undulating, becoming steeper & more cut up towards the mountains. The hills are very stony & gravelly with a scattered growth of *Artemisia*, bunch grass &c. with a few Elder & *Ceanothus* bushes high up. Lizards & horned lizards abound with a few snakes, but no rattlesnakes yet seen. The Sage fowl is common & flocks of 100-200 Prairie fowls were seen in this valley. Badgers & wolves are also found. The soil of the valleys is fertile & the hills well adapted for grazing, the Indians raising very fine cattle & horses. Along the brooks are small oak, paper-bark, birch & cherry trees — 14 miles

Atahnam River —

Aug 17th Continued on northward through the "Plains" for about 8 miles encamping by another small river called Atahnam. Noticed on the high hill sides beds of sea salt in loco apparently formed by several streams of lava having flowed down — and where the river had cut deep ravines terraces projected from these various beds. The whole rock appears to be basaltic and a vein of semiopal. was noticed yesterday on entering the plains. Collected several horned lizards, one of which was of a brick color assuming the hue of the rock around it. which power Mr. Gibbs says they possess. The Indians think they have the power of poisoning by their spines. The snake caught is common on this side of the Rocky Mts. & is called the "Blue Racer" by the emigrants (Bascanion). Aug 18th Remained in camp to day. Secured another Blue Racer which was found under one of the soldiers beds. Shot a Turkey Buzzard, which is common along the Col. River & there eat dead fish. Noticed a small black hawk? ^{Black} ~~hawk~~ Also *Picus torquatus*, blackbirds, swallows & night hawks, the 2 last migrating.

30 Aug 19th Still remain in camp Obtained
~~Nuttall's whippoorwill~~
~~two small snakes~~ which I preserved. It rained
sharply during the latter part of the night & the
morning. The valley in which the camp is
is surrounded by perpendicular trap cliffs
20 to 60 ft. high which appear to have been
worn by water at some former period. The
rock is cut into columns & grotesque forms. The
valley is now from 2 to 3 miles wide, & the
cliffs become lower as we go eastward.
The basalt is in two layers the lower horizontal
& slaty the upper in blocks & columns.

Aug 26th Proceeded northward about 16 miles
& encamped by the "Wenass" river. Crossed
on the way two other branches of the Ta-
kina, all very similar in size & appearance
to the last described. The veget-
ation on all is similar consisting of poplar
& birch trees, Alder, hazel, cherry, rose-shrubs -
Clematis vines & a few herbs now flowering.
Noticed nothing new on the way in the
Animal Dept. Between the 2nd River & the
camp found a range of rounded hills consist-
ing of volcanic sand gravel & ashes in strati-
fied layers much resembling the old dep-
osit of a river but with no appearance of
fossils. The materials were more or less
solidified.

Wenass River - 31

Aug 27th Remaining at the camp of 20th
Lieut. Hodges went on the 22nd to Puget
Sound for provisions taking the escort -
23rd Capt. M. C. left with Mr. Winter & man
& 2 pack animals to explore the vicinity of Mt.
Rainier. 24th Lieut. Duncan & Mr. Giddings
with 4 men went to explore to the northwest.
25th Mr. Gibbs started with a man to ex-
plore the Okanogan river down. The weather
through the week has been excessively hot
the thermometer rising to 101° in the shade.
falling at night to as low as 48°. I have
walked & rode about this valley & the
hills adjoining every day but obtained
no animals except a few snakes.
The *Rhus diversiloba* grows abundantly
in this valley & has poisoned many of the
party including myself, causing a very
troublesome itching eruption. In Califor-
nia a kind of nightshade (*Solanum*) is
used to cure this eruption. An *Opuntia*
similar to *O. vulgaris* but with spines
1 inch long & smaller leaves & flowers grows
about this region. It is now past flow-
ering but the fruit is not ripe. Noticed
several magpie stately.

Aug 29th Yesterday I walked & rode for some hours but obtained only a few plants of common species. Today Capt. M. C. returned from the mountain & reports the country very difficult. A large rattlesnake was killed by his party but not preserved. He saw also a species of marmot abundant on the mts.

Aug 30th Shot a *Crotalus lucifer* near the camp & preserved its head the rest of it being too much injured.

Obtained several specimens of *Uris* which are eaten by the natives - all appear to be of one species. Weather continues very hot.

Aug 31st About sunset the sky became covered with heavy clouds & a storm set in from the west with a high wind & thunder & lightning in the east. Rain driving but not heavy.

About noon today it stopped & began to clear. Lt. Inman returned soon after having visited several lakes in the mts toward the N.W. the source of the main branch of the Yakima.

He brought me a skrew (in alcohol) which was caught swimming actively under 2 ft. water. He found trout & a sucker "abundant".

Mr. Gibbs returned about sunset having gone to the mouth of the Yakima & returned in 2½ days by a shorter route.

Sept 1st Capt. M. C. having determined to reduce the party & train to the least number on account of the failing of a large number of the pack animals and it being impossible to obtain others here at Puget Sound. Today the preparations are being made to send to the Dalles all the soldiers and other supernumerary persons & some baggage. I have determined to send by the same train all my alcoholic collections & skins hitherto obtained to care of Dr. Benson at St. Vancouver. All the alcohol having leaked out of one can & part of the other I am left without any & shall have to try Goodby's Solution.

Obtained no specimens today. Sept 2nd Walked for several miles around the valley but obtained no specimens except two snakes one of them not before noticed. Lt. Mouney left with the escort & for the Dalles - sent by him for some alcohol.

Sept 3^d Went 14 miles to the main branch of the Yakima crossing a high range of hills from which three snow peaks are visible in clear weather. Saw many sage fowl on these hills & two were shot by the party.

34 These birds appear to prefer the high ground while the Prairie fowl is very common in the valleys. No good specimens have yet been killed most of them being immatures. The valleys crossed on this march have steep sides. In some places columnar basalt appears, while the bottom is covered with sharp angular fragments. The weather all day was cloudy but it did not rain much.

Sept. 4th Remain at this camp to wait for Lieut. Hedges & Mowry. Shot a Magpie which I preserved also a red-tailed hawk shot yesterday & the head of a prairie fowl. The valley of this river is here at least 15 miles wide & partly meadow with large pine & Cottonwood trees in groves & groups in the drier parts. The river like all yet seen flows over a bed of Basaltic & Quartz pebbles. It is here about 50 ft wide & 2-4 deep at this dry season. Nearly the whole valley appears to be overflowed at times & is full of the dry beds of what are in winter branches of the river.

35 Sept 5th Still in Camp. The storm has passed & it is again growing hot. Shot a bird which seems to be the *Corvus Columbianus* of ~~Thalass~~. It is however much more of a jay in habits & appearance having similar crest & feeding principally on the seed of Pines. It also hangs head downward from the cones like the Titmouse. None of the larger Jays (Stettlers) so common near Vancouver are seen here. The western *Colaptes* as like to that of the eastern states is common. Its notes & manners seem precisely the same. This bird, the *Sturnella neglecta* & some others are sufficiently like their eastern analogues to be considered mere varieties. Sept. 6th Weather very hot during the day & being unwell I did not go away from Camp. Sept. 7th Caught a small trout with a hook similar to those found before. Also a very young *Eutamias* like that of ~~and~~ Gold but is found in small quantity by some of the party washing sand of the river. Sept. 10th Still at same Camp. Have not used anything important since last date. Goodby's Solution No. 2 has failed to preserve the snakes & fish obtained since. The 2nd Lieut. Mowry returned from the Dalles today.

To Wenap River —

B

A

Saw
chickadee

Naichess R. →

B

A

Sunday Sept. 11th A chief of the tribe residing here named "Quhi" visited us with several of his nation. Some of these are tall well-formed men, looking better in health & constitution than the tribes nearer the settlements — They report that Gold is found on a river about 2 days journey from here & one man has a large piece mixed with quartz worth perhaps \$15. but which he will not sell for any amount —

Sept. 12th Capt. M^r C. & party returned from a tour to the lakes having left on the 4th — Mr Gills brought a species of sucker's skin — a fish common in those lakes & he thinks also at Astoria. He saw there the *Picus imperialis*? as I suppose from description but could not get a specimen —

Sept. 13th Rode 15 miles up the river & back, but got no specimens — The forest begins about 10 miles up, on the hill. Saw there Steller's jay again —

Sept 14th Obtained from the Indians the specimens of fish preserved. Two large trout evidently of different species. The 1st is the same as a specimen before obtained & is caught near Astoria —

Sept-16th Yesterday was warm & sultry - nothing of importance occurred Today Lt. Hedges returned with his party from Nisqually - I caught with a hawk several fine trout of the black spotted species and a fish resembling a snake but with a soft hag like snout -

The day was cloudy with passing showers. The little fish preserved with alcohol is a rare species & never larger than this.

Sept. 17th Busy all day writing letters.

" 18th Day warm & nearly clear - Obtained three specimens of *Eutamias* *vagrans* which is the only snake seen here - Saw it also on the Wenatche -

" 19th Crossed ^{8 1/2 miles} to the north side of the valley & encamped in a ravine through which a small branch of the Yakima flows. Noticed nothing new this day.

Sept. 20th Crossed over a high range of hills covered on their upper parts by trees principally Pine & Larch, the latter more abundant than before seen. Saw several new plants but not in flower now. From the top we could see the range of mountains extending northward nearly to Mt. Baker one high peak & several smaller ones to

being covered with snow the whole forming an impassable barrier toward the Ocean. The northern branch of the Columbia was also visible here and the bordering plains for a long distance. These are entirely bare except on the spurs of the mountains where the Pine grows. Encamped in a ravine on the northern side of this range having travelled $16\frac{1}{4}$ miles -

Sept 21st Leaving the Camp followed the valley down to where it opened on the Columbia & travelling along it for some miles encamped on the bank of the Wenatchapam R. close to its mouth. The country is very similar to that hitherto seen on the Plains but the rocks are composed of mica slate & gneiss containing a large amount of quartz. Obtained a snake (*Bascanion*) but differing from those caught on the Atlatnam in being of a pale green instead of purplish. Noticed the spring lizards obtained at the commencement of the Plains but did not get any. On the way saw some rocks curiously water worn & one place covered with figures resembling the Indian picture writing.

42 Sept. 22nd Remained in camp to wait for the return of a mule which had strayed back from the last camp. Obtained from the Indians two fish & preserved their heads. The last is a new species & is the largest trout found in this River. The winter salmon, or dog mouth is also ascending the river & caught in quantities. The largest here seen was 3 ft. long. The white spotted trout is alone caught here the black spotted kind seeming confined to the smaller branches. The Indians here are the Spokans, a much finer looking tribe than any before seen. One however was deformed from curvature of spine. The small pox has lately been among them. Day very hot & sultry.

Sept. 23rd Travelled 12½ miles along the Columbia & encamped on a high bank. The country passed through is very rough the valley averaging 5-6 miles wide, with steep hills & cliffs rising 800-1500 ft on each side with a few trees on their summits & sides. The river about ¼ mile wide, wind from side to side of the valley making the trail very bad in parts. Saw a few plants not before noticed.

Sept. 24th Continued along the River 43 for about 2 miles & encamped in a Pine grove at a bend of the stream. Passed over two very bad places formed by the sloping debris. at the foot of the gneiss cliffs, where the broken fragments shalve down into very deep water. At the second, two mules rolled down & were killed & several others severely injured. Noticed nothing of interest and got no specimens.

Sept 25th Travelled 14 miles, still along the course of the river, crossing over one steep hill on the way, at the top of which is a lake about 3 miles wide, whose one part is & extending 20-30 miles back into the mountains to the west. Passing round the Eastern end of this lake we descended the hill to the Col. R. & encamped. Killed on the way a *Crotalus* differing from any described in Smith's Cat. Saw in the lake several ducks & a large flock of Prairie fowls nearby, the highest point where I have seen them. The lake contains trout, but Salmon do not ascend to it on account of the steep fall of its outlet. Another *Crotalus* was killed, still different from the above but I did not see it.

44 Sept. 20th Proceeded on along the Columbia passing round part of its northern bend & Camped on its shore having traversed 16 miles. Crossed the Barriere River where there is a large Indian village employed in catching salmon. Obtained no specimens of animals on this route. Several Rattlesnakes were killed by the party but I did not obtain any. They seem to frequent the mountains more than the Plains, though the Yellow species occurs along Snake River.

Sept 27th Proceeded along the river 5¹/₂ m. crossing the Okanagon R. encamped near the Fort of that name. Obtained a Great Horned Owl here which I preserved. Learning from Mr. Leclerc, that there is an Indian pass through the mountains near the Barriere R. Capt. M. C. determined to return & explore.

Sept 28th Leaving the River early we crossed the hills in a Northwest direction for 12¹/₂ miles & encamped by a small spring in the forest. Noticed nothing new on the way. Crossed a deep chasm through which flows a small stream emptying into a lake near the Col. R. Here met the thick pine woods which continued upward.

Sept. 29th Continued on westerly for 45 about 8 miles where we met the valley of the Barriere River, & followed this to the western branch along which we went until near sunset having travelled 18¹/₂ miles. Obtained no specimens of any importance. Noticed the deciduous trees to be changing their colors, the poplars to a bright yellow and some shrubs to brown & red. The valley of this river is about 5 miles wide at its widest part and has evidently been formerly occupied by a lake which has in its subsidence formed terraces of various heights, as is the case with all the valleys here.

Sept 30th The train returned about eight miles & encamped, while Capt. M. C. continued on up the valley & pass. Gold dust of a coarser quality than any before obtained was washed out here. Scarcely any quadrupeds or birds seen. Oct 1st Remained in the same camp.

The Capt. returned having found the pass fit only for pack trains. I walked for some miles about, but got no specimens. Found several small lakes in the hollows of the mountains around. Saw a flock of about 10 Mergansers.

46 Oct. 2nd Proceeded about 12 miles down the river & encamped. Saw on the way a Coyote. Obtained at camp some specimens of a shell seen since striking the Wenatchapam (in water), the Melania common on the southern branches having disappeared. The whole valley up this river is composed of terraces of gravel & sand overlying granitic rock. From 20-200 ft. above the present stream - being the beds of a former arm of the lake or sea then existing.

Oct. 3rd Continued on the same course to the mouth of the river & thence along the Columbia to the camp of Sept. 20th having made 13½ miles. The general appearance of the valley similar except towards its mouth where are some high hills making the trail very difficult. Along the river I shot at a Coyote on the way. Obtained no specimens.

Oct. 4th Proceeded along the same trail as on the 2nd ult. I camped at the Okanagan R. on the west bank. Obtained here specimens of four species of Artemisia making 6 seen in flower. Remained half a day to exchange horses with the Indians. (7½ miles)

Oct. 5th Proceeded up the course. 47 of the Okanagan R. 12¼ miles camping on its banks. Noticed no new animals or anything else worth preserving. Oct. 6th Continued on along the river 10 miles. Obtained no specimens. The only animals seen are Prairie fowl, ravens, magpies etc. This river is more slow & shallow than most of those seen on its banks are some fine arable lands.

Oct. 7th Same course no variety in the scenery or productions. Have obtained a few plants for Herbarium. 15¼ miles passed. This appears to be about the commencement of Autumn in this region, the deciduous trees turning brown & yellow & some of the early-flowering plants are blooming again.

Oct. 8th Continued on for 15 miles up the river. Saw at camp great numbers of a species of Salmon, swimming up stream and nearly worn out by their long journey up stream, their tails almost gone & bodies turned of a red color so that they were easily seen. Very few are said to return to the sea, after spawning & their carcasses line the shores of the Columbia in the fall, feeding multitudes of birds & quadrupeds. Dogs are often made sick so as rarely to recover after eating them.

48 Oct. 9th Continued on for 1½ miles up the river passing the furks & encamped on the side of the fourth lake - Here I noticed the species of *Sialia* seen on the summit of the mountains in the beginning of Aug. & also along the Columbia this month - (*S. occidentalis*) Found three spring flowers in blossom where the ground had been burnt over. Oct. 10th Remained at the same place while a small party went to visit a lake to the north - I obtained here several fish (Carp?) the same as are caught in the Col. R. but no trout or Salmon were seen - Ducks are common in small flocks. Have noticed the green wing & blue wing teals, Mallards & sawbills. Little migration of birds as yet.

Oct. 11th Returned along the east shore of the river for 1½ miles & encamped at the second lake. Obtained here several shells as specimens. Rain having threatened for several days commenced this evening accompanied by a strong wind. Oct. 12th Rain ceased this morning and leaving camp, we continued a short distance down the river, then leaving it -

went eastward, reaching the top of 49 the divide about 1½ P.M.

Here we encamped having made 9½ miles, only, to wait for Capt. M^c Clellan who had gone to visit the west branch of the river - Noticed nothing important & got no specimens.

Oct. 13th Proceeded eastward for 3 miles and encamped on the bank of a small river running ^{the Siyakan} east - Obtained no specimens. The larch is abundant through this region with some spruce & fir trees. The soil appears very good. But few birds seem to inhabit or migrate through this tract and we see scarcely any other animals.

Oct. 14th Followed down the river nearly east for 1½ miles - Saw at camp the water-ousel for the first time. The weather was cloudy with slight showers all day.

Oct. 15th Continued on the same course for 15¼ miles passing through some beautiful farming land lying in the valley & steep mountains on each side - Noticed no animals except the ruffed grouse and some ducks. The pine squirrel is very plenty in this region much resembling in habits the eastern Red squirrel.

50 Oct. 16th Followed on the same river for 17 1/2 miles and encamped on its banks. Saw a species of shrike on the way with the two kinds of jay before seen. Also a large white gull alone. Some of the same species were seen on the Col. River the 23rd ult. This valley is more wooded than most of those lately seen - the trees & plants being mostly the same as those seen near Mt. Adams. Though the long leaved Pine is here mixed with the firs of the western side. The rocks seen are all granitic consisting of mica slate, quartz or gneiss, commonly alone rarely in combination. Gold has been found here more plenty than on any other branch.

Oct. 17th I with several others remained in camp till after 2 P. M. having to wait for our horses which had straggled away. While here I walked around the vicinity & collected a few minerals but did not obtain anything else. Leaving camp at 2 we travelled 11 miles and reached the main party on the bank of the Col. R. encamped; opposite Fort Colville, and a short distance below the mouth of the river. Country much as before.

Oct. 18th Crossed the Columbia in ca. 51
noes, swimming the horses over and encamped near the Fort. The current here is very rapid, so that several horses were nearly carried away by it. Saw large flocks of ducks but nothing else new and got no specimens.

Oct. 19th Remained in camp. Late last evening Gen. Stevens arrived at the Fort in advance of his party. His survey has succeeded very well so far, having crossed the Rocky Mts safely with his whole party. I walked for some distance around the Camp to obtain specimens but got none except a very small Nuthatch (*Sitta pygmaea*). This species of Nuthatch associates in small flocks singing like the Yellow bird as they fly about the trees. I have seen them nowhere else. Noticed the Robin, redwing, woodpecker & downy Woodpecker. Oct 20th Still in camp. Visited the Kettlefalls which are not very high. Obtained nothing new to day. The weather has been moderate with bright days & cool nights since the 17th.

Oct. 21st Busy with specimens and in visiting the fort today — A crop fox was killed by one of the men but I did not know of it till after it was skinned. & therefore spoiled. Very good onions, potatoes & beets were brought in for sale by the farmers. Heard last night flocks of Killdeer flying high overhead — the moon was shining brightly — Some frost last night.

Oct 22nd Left Camp & travelled 16 $\frac{1}{4}$ miles towards Spokane river — Saw nothing of importance as specimens — The valley passed through was fertile & partly cultivated. Saw before leaving a large flock of Prairie fowls flying to the tops of trees to warm their selves in the sunshine as I have often seen on cool mornings. Therm. +21° at 3 P.M.

Oct 23rd continued on along the valley. Morning very cold Therm. at daybreak 10°. Clouds gathered towards night and it felt snowy. Crossed a small but deep stream across which was an Indian bridge, swimming the horses — Saw a few of the same birds seen on the Columbia last month. 13 $\frac{1}{2}$ miles.

Oct. 24th At daylight there were about four inches of snow on the ground & still snowing. Air somewhat milder — Travelled 8 $\frac{1}{4}$ miles & camped by a large plain in Spokan Co. Snow ceased about 1 P.M. but a fog still hid the view in the distance. Country much more level than before seen — Soil appears good & water abundant — The 2 Pines & Larch still form most of the woods with a few Poplars & birches on the low grounds.

Oct. 25th Travelled 14 $\frac{3}{4}$ miles striking part of the Spokane R. & camped near the old Presbyterian mission of Chinikaine now deserted. Here was a large village of Spokane Indians living in rush houses more comfortably than any before seen. Observed on the way more species of birds than any time since we started, but none seemed new. Day throughout cold & clouded over. Country still wooded with small trees & mostly level. Valley traversed is fertile & grassy — Oct 26th Continued on S.E. for about 11 miles & encamped by a small stream. Saw several Prairie & blue grouse on the way. Crossed the Spokane River where it has steep precipitous banks, the basaltic cliffs being about 50 ft. high & crumbling —

Spokane Plains
 Oct. 27th Remained in camp to-day.
 The country is an elevated table land only wooded along canons which traverse it from East to West a few miles apart. The trees here are the two species of Pine & several spruces. The Coeur d'Alene Mountains can be seen at a distance bordering it on the East & North. Obtained the Woodpecker mentioned in Catalogue.

Oct. 28th Walked several miles around the neighborhood. Obtained another woodpecker (v. Cat.) which I cannot distinguish from that got yesterday except in color. It was in a flock consisting of the two common gray and black & the brown creepers. Also the head & tail of a male Sage fowl several of which were seen near camp. They feed on the *Astragalus tridentatus* leaves & are too strong flavored to be eatable. Its flight & habits much resemble the other grouse but I have never seen it near trees. Saw also a cross fox, but did not kill it having only fire shot in my gun at the time. St. Donelson & party arrived here to-day.

Oct. 30th Left camp & travelled 8 miles camping at a small brook only because the Guide said we could not reach water again that day. Obtained here the Pine squirrel which is exactly like those before seen everywhere in the wooded districts passed through. Also the owl the first of this species I have seen though some were seen by Mr. Gibbs on the Galena in Aug. Passed to-day several dry lakes which have no outlet.

Oct 31st Remained in this camp all day. I shot here the Grouse (*O. phasianella*) the Prairie fowl often mentioned. Walked several miles to the top of a high hill where I could see the whole horizon to north. The view quite level without a hill or mountain visible. There are no trees in sight in that direction. Saw a flock of Plover (*C. montanus*?) but got no specimens. The country resembles that seen near the Okanogan river. Nov. 1st Travelled 9 1/2 miles, camping by a small stream. Obtained here a woodpecker (v. Catalogue) which very nearly resembles those of the 28th. Shot also a green-winged teal.

56 Nov. 2nd Continued on 19 miles through a similar level country, passing near several lakes in which were large flocks of ducks & geese. These lakes resemble those before seen and the water is brackish, they having no outlet. Saw no other animals except grouse. Weather continues very cold & the wind strong.

Nov. 3rd Made 17½ miles southerly and encamped on a branch of Palouse River. Saw no animals worth noticing.

The country is plain & barren with Basaltic rocks projecting in many places chiefly of the columnar variety. A few valleys appear arable but there is no water and it does not seem to have rained here for some months. All the vegetables seen are past flowering & withered. The general appearance of the country is similar to that south of the Treacher.

Nov. 4th Travelled 16½ miles in the same direction, crossing several branches of Palouse R. About 12 P.M. reached the valley of the Snake R. & descended a high bank to the mouth of the Palouse where we crossed over without trouble in canoes. The animals swimming.

57 Observed the trees & plants here to be at least 2 weeks less advanced in decay than on the Plains & saw an Aster in flower. The weather is much milder & the sky overcast, the thermometer standing at 6 P.M. 48°. This river is about as wide as the Columbia at Colville but not so rapid & the country round is bare & precipitous. Saw no specimens worth collecting to day.

Nov. 5th Travelled 21 miles nearly south & reached a branch of the Walla Walla R. The country is an undulating prairie without trees or shrubs & has been lately burnt over. Very few rocks appear on the surface. Saw a gray wolf at a distance, but no other animals. The ground is very full of badger? holes. This river lies in a beautiful valley & is thickly bordered by Poplar & birch trees. It is here equal to the Treacher.

Nov. 6th Continued southward through a similar country to the valley of the main Walla Walla R. of which the above is only a branch. Here are several farms & the soil & production the best yet seen. Saw no new specimens to day. Travelled 19½ miles.

58. Nov. 7th Followed down along the river nearly to its mouth. The valley is narrower & rougher in this part, and the basalt again appears on its sides. Saw nothing else worthy of note. ^{18 1/2 m}
Nov. 8th Left camp & proceeded on to the Col. River passing Ft. Walla Walla on the way. The river here cuts through perpendicular basaltic cliffs at least 500 ft high, which are worn & channeled in to many curious forms. Followed down its course for 12 miles. Noticed many plants still in flower & collected some. Saw a species of shrike apparently different from those before seen. 12 miles. Saw at the Fort the carcasses of a grey wolf & a Coyote unfit for specimens.
Nov. 9th Continued along the Columbia for 16 miles, crossing the Umatilla R. which is here a brook. The basaltic cliffs continue along nearly to its mouth but below here the shores are lower. The country gradually becoming more level & sandy. Obtained nothing today. There does not seem to have been much frost here yet as vegetation continues about a month later than at Ft. Colville.

59. Nov. 10th Continued our journey down the R. for 14 3/4 miles. A violent wind from the southward blew all day in our face filling our eyes with dust & making this the most unpleasant day yet. The country is nearly level & very barren, covered by the shrubs common on these sandy plains.
Nov. 11th Still followed down the river crossing a small stream called Willow creek about 11 miles from camp. Wind nearly as strong & cold as yesterday. The basaltic hills reappear on the opposite bank, but less precipitous than before. Several species of Ducks are in the river & remain here through the winter. Nothing preserved. ^{15 m}
Nov. 12th Continued on along the river for 9 3/4 miles a strong wind blowing from the West with sharp rain most of the time. After writing my notes last evening I obtained an Owl (*S. Otus*) which I preserved. Cliffs becoming higher & steeper.
Nov. 13th Made 15 miles in the same direction crossing John Day R. at its mouth. The country continues rough & bare as before & the weather cold & disagreeable. Saw no specimens.

60 Nov. 14th Continued down the Columbia
crossing the Falls River about noon 11 a.m.
I camped on a small stream ~~about 5~~
~~miles~~ beyond it - Observed on the hill
sides here, small round standing
close together as if the remains of
trees burnt down - They were about
10 ft wide and 3 high - No trees exist
now on these hills but the Pine forest
commences again at the Dalles
Nov. 15th Proceeded on for $9\frac{1}{2}$ miles
to the Dalles & encamped near there
Here is a level basaltic plain through
which the Columbia flows making a
very narrow channel. The hills on
round are covered with scattered
Pine trees & small oaks, on their sides
both of the species before seen
Nov. 16th Remained all day in camp
Heard at night numbers of Coyotes &
wolves howling around the hills -
Noticed the meadow lark & flicker re-
maining here for the winter. A warm spring
issues from the hillside near by, having
the temperature of about 43°. Weather this
morning very cold & a white frost fallen
Sky became clouded during the day
& the air warmer & more pleasant

61 Nov. 17th Left the Dalles in a small
steamer and arrived at the Cascades
of the Columbia about 8 $\frac{1}{2}$ P.M. 45 miles
This region is well described by
Fremont in the journal of his 2nd exped.
It rained as soon as we entered the
mountains about 10 miles down, while
a clear sky could still be seen Eastward.
Rain continued all day & the air was
foggy - At the Cascades is a slide
of land on the south side which is sup-
posed to have turned the river from
its old course & produced these falls
Nov. 18th After transporting around
the falls for 2 miles distance embarked
in row boats at 3.35 P.M. & arrived
at Vancouver about 12 $\frac{1}{2}$ A.M. 19th
Rain continued all the time but here
the air is much warmer than eastward
There has been only slight frost here
I noticed at the Cascades strawberries
in bloom and also a species of Geum
The mountains are highest there & gradu-
ally diminish in descending the River;
covered with Pines & spruces all the
way, willows & Poplars growing along
the banks of the River -

62 Fort. Vancouver

Nov 30th Have remained at Vancouver since last date preparing specimens to send off &c It has rained almost every day but been warm. Notice about here Stettins jay, Harris woodpecker many ducks geese & thrant. On the way to Portland saw the two common squirrels. Obtained a specimen of *Sialia Occident.* These birds are now about in flocks resembling the *S. Wilsonii* in habits notes &c. I saw also a shrike (*L. borealis*)

Dec 14th Left, Vancouver & went to Portland by land. Sent off by the steamer of 12th all my collections up to date. Have noticed nothing new lately, all the birds appear to remain as at the last date except some of the water birds. Weather mild & raining. Several flowers continue in bloom.

Dec 17th Went up to Oregon City. Noticed the *Arbutus Menziesii* on bank. Saw a few ducks & loons.

18th Found a salamander crawling out

63

Dec 24th Left O. City & returned to Portland. Yesterday was a slight fall of snow which melted opening soon. The river is now full of Cormorants but very few other water birds seen. The Golden Eye & Buffal headed ducks are the commonest. Dec 25th Returned to Vancouver to-day.

Weather warm & raining.

Dec 29th Walked out with gun & got the specimens mentioned in the Catalogue - some were so fat as to be hardly skinned. The other species were common in flocks since my return in Nov. except the Wren which is commonly solitary. This and the first seem to be permanent residents. Obtained yesterday some *Planorbis* shells which are abundant in the lakes but have no companion. Also a smooth *Helix* which appears to be a full grown species.

Dec 30th Obtained the two nutcrackers mentioned in catalogue a male & female.

Dec 31st Shot a woodpecker of the species got on Spokan Plain. It is very common here now (*P. Housii*).

1854

Jan 9th Remaining at Ft. Vancouver

I obtained no specimens since last date until to day though I go out almost daily (s. Catal.) The three last days of last week were very cold - the thermometer falling to 15° the coldest this winter.

Still see some birds about, but most are very wild - Scarcely any ducks remaining.

Jan 12th Obtained a spec. of *Colaptes* which appears to be an adult male the former specimen having been a female. Weather warm & pleasant. Saw several meadow larks & a Robin. the first since our return.

Jan 13th This morning there was a fall of snow for several hours which however melted soon as it fell. Shot four Grosbeaks, (*C. neptunus*) at a shot, & have seen several flocks of them about lately. Also noticed the *Prunifraga* abundant & very familiar. The flocks come down to the Cornish bushes in search of food. Their stomachs contained small seeds of Fir? Have seen for some days past a bird resembling the Larch and Larch of the 2nd year marked black & orange, but too wild to shoot.

Jan 18th Snow fell two nights ago to the depth of about four inches - Weather continues cold but clear since then.

Saw again today the unknown bird keeping in the thick tops of tall fir trees. Obtained the string. Townsendi mentioned in Catalogue which was with the Chewink & I thought was the female, but it differs in dimensions & in the iris - The

Caradacus was alone & was picking seed from shrubs its stomach being filled with the same seed as that of the Grosbeak, deprived of the husk - I have seen no others of this species. Noticed lately a new evergreen shrub like *Laurustinus* & collected seeds of it - See the Pine Squirrel still about & also have tracks.

Jan 19th Shot today two of the birds above mentioned resembling in habits & appearance the Thrush. In their very muscular gizzard were a number of seeds. Also skinned the two other birds in Cat. (*String. Townsendi* & *Pipilo Oregonus*) Noticed nothing else new today. Weather continues clear & cold.

Jan 23^d Weather since last date very cold, but clear. On the night of the 21st snow fell to the depth of 6 inches. River entirely closed up by ice. 9 in thick. Obtained today the Grackle mentioned in Cat. which bird frequents the stables about here in flocks of 8 or 10.

Since the cold weather the Redwing has disappeared. Both species were common before that, and in their habits and notes are very similar, but the Grackle was not so common here in summer.

Jan 25th The weather since last date has been too stormy & cold for collecting and about 6 in snow fell on the 24th.

Today thawing & cloudy. Obtained two female Grackles and one Redwing as per Catalogue. The latter is the only one I have seen lately. Have also some meadow larks & a hare.

The anatomy of the Grackles resembles that of the Thrushes more than the Finches.

Jan 30th Went out & obtained the three specimens of Cat. Noticed nearly all the same birds as before the snow storm.

Weather warm & thawing. Large flocks of Ducks &c flying about but are very wild.

Feb 4th Since last date the weather has been mild & some slight frosts at night. The River here is still frozen fast down to the mouth of the Willamette. Have obtained the specimens in Cat. Found the Owl dead probably from cold. The Robins have returned & also some other birds, from which I predict warm weather. Saw a Shrike on the 2nd.

Feb 12th Obtained a pure specimen of Larinus - ? Saw in a small pond near here a number of Salamanders like that sent in first coll. dead from being frozen up in the mud. They were buried in. The largest was 9 in. long. They were much swollen from decomposition & their skin was loose & peeling off.

Feb 13th A man brought here a Cougar killed near Cape Horn, but asking too much for it, I did not buy it. Several were killed in Oregon this winter. The weather since the 4th has been very wet so as to prevent my hunting for specimens. Have seen none new to me nor observed anything notable.

Feb'y 13th Left Vancouver & went to Portland. Found there the same Panther mentioned on the 13th which was presented to the Inst. by Mr. Drew. Weather rainy but mild. Saw very few ducks in the river, & none new.

Feb'y 14th Busy to day & yesterday preparing the skin of the Cougar above mentioned. Found it to be a young male probably not yet full grown measuring 7 ft. 4 1/2 inches. The skull has been much injured by the ball. Heard some Blue Birds to day.

Feb'y 20th Left Portland and descended the Columbia to a point below Cathlamet where the steamboat had to anchor about 8 o'clock having a barge in tow from Oak Pt. Down. Saw several of the birds called "Sheeg" a few ducks & some swans. The weather became clear towards night, & I saw Mt. St. Helens' plainly from near Cathlamet. The Columbia is much the same in appearance as above - but here spreads out into a bay, & the Islands are partly covered with Spruce trees.

Feb'y 23rd Arrived here on the 21st at 9 o'clock. Since then the weather has been rainy with considerable wind. To day it is more clear & warm as before. The shores here are high & bold forming points on each side - Lewis & Clark Pt. opposite here is about 3 miles distant and partly bare of trees - About ~~these~~ the trees are mostly Coniferous of 4 or 5 species & the maples before mentioned with the same shrubs as up river. All appear to be of larger growth than above & the season seems somewhat more advanced.

I see several species of ducks, common ants & Gulls about here, and the Crows in flocks singing much like the Yellow birds.

Pacific City W.T.

Feb'y 24th To day started from Astoria in a sailboat and in 3 1/4 hours reached the mouth of Wallicut creek a mile east of Mr. H. - who has invited me to stay. The wind was very favorable & the tide in the first of the Ebb. Distance about 10 m. The appearance of the shore is much like the opposite, steep points & some low tide meadows between them in the bays.

70 The river on this side is shallow with bars bare at low tide, but the inside of the Cape is said to be a good harbor. The whole country, excepting the sand beach & the hill side exposed to the S.W. - where there are some small fern prairies, is covered with dense timber of various species of Coniferae & in some springy places patches of large alders. The Poplars & Maples have become scarce as well as Oaks. Mr H. went with me in a canoe through a lake about a mile long & crescent shaped which lies in the neck of land between the Col. R. & Shoalwater Bay - By a canal less than three miles long the waters might be connected. This lake is of fresh water & colored brown by decayed vegetation. Saw here a blue heron & ducks.

Saw a few Chinooks who are almost extinct as not more than 150 are left. They were of a lighter hue than the Indians of the inner country. There are houses every few miles along the beach & a number at the town of Pacific City as well as at Chinook Pt. several miles up. Elk & bear are said to be found here. Sturgeon are just beginning to go up the river.

Feb 25th Mr H. & I walked to Mr M's house about 4 miles up the beach crossing the Creek on the way. The woods here are much more open than up the river the trees being very large & the principal undergrowth the Salal and the Rubus spectabilis or Salmon berry. A Willow & an Alder are just beginning to burst out into flower. The soil appears to be a slaty reddish clay forming the hills covered by spruces - and sand forming the low lands of the beach. At the Point East of Mr H's the formation is a crumbling rock having a dip of 80° toward the N. & containing round smooth boulders of pale bluestone white on the surface, like limestone but not effervescing with strong Acetic acid. Stumps & trunks of trees are also embedded in it but I find no traces of fossil shells or plants. I obtained here species of *Psammobia* & of *Mytilus* closely resembling those of the Atlantic coast & a small *Balanus*. Also a species of *Tringa* which frequents the sand flats in flocks of 100 or more. Heard of a strange animal resembling a bear but reddish colored with a long tail and smaller.

Mouth of Columbia -

Feb'y 2nd To day I went with Mr. H. to the north or weather beach of Cape. It is appointment. The ridge between is about two miles wide & of not very high. At its exposed side are several caverns formed by the sea into one of which we went about 80 ft. The rock was a dark & crumbling kind like coal but not marking. I preserved specimens of each variety - In one I saw the skeletons of two Robin & Varied Thrush which had died of cold. Also a large nest containing shells & bones, perhaps built by the white head eagle. The beach is broad & sandy with a heavy surf rolling on it, the shore covered by logs. The only shells seen were a species of *Scallop* some *Cardia* & the *Mytilus*.

Shot two species of *Tringa* which have nearly the same habits, flying in large flocks of 2-300 & running in the edge of the receding wave for this food. Saw also a flock of 50 gulls all the large species - and some others flying about singly. Saw a middle sized hawk, catching the sandpiper & also a butcher bird which I could not get a shot at.

We walked along the beach for about four miles to a farmers house. The edging of the sea was nearly straight to this place & some miles beyond can be seen the end of this Peninsula and the point of Cape Shoalwater. For 2 or 3 miles from the beach is a low prairie tract with scattered groves of spruce &c and several lakes of small size. Returning met a pair of Eagles & killed one which is of much larger size than the W. H. Eagle skinned on the 18th ult - differing also in the brown color of the plumage (young). Found in its stomach a ducks bone & some parasitic worms - Since the last date there has been a severe storm from the S.E. with high wind rain & hail. Today it is very changeable weather the sun shining out at intervals.

March 2nd Yesterday I walked round a small lake a distance of about 5 miles but got no specimens. Saw the Painted Thrush again & a few ducks - Pintail - Today shot a Sea duck, a species common here now. While wounded three young Eagles pursued it. To day it has not rained but it poured hard yesterday & last night.

74 March 4th Obtained today three of the
Carpobills seen at Astoria & Vancouver
in the winter. Their habits & notes re-
semble the Goldfinch much, but their
food seems to consist almost entirely of
the Pine seeds & they rarely descend to
the ground. Weather continues rainy &
a species of Willow has been flowering
here since my arrival, also Stettaria.

March 6th Shot today a hare of the
species common west of the Cascades.
It does not change color in winter.
Heard the Thrushes singing a few mi-
nor notes in a sharp high key like the
rattling of chains. Went in a canoe to the
lake mentioned Feb 24th but saw nothing
except one duck. Could catch no fish
with the fly & found no shells there.

Yesterday I found indistinct & crumbling
remains of shells in the rock of a point
which I think is wholly of sand and clay.

March 9th Went yesterday to Cape Dis-
appointment & its vicinity. The points of rock
exposed on the shore are apparently of the
same ~~hard~~ material as above noticed veined
by albite.

* *T. naevius* + *B. aul.*

To day shot two Green wing teal 75
which is a common species in this
Country. Observed also a blue Crane
& several eagles of the two varieties.
The weather continues rainy with short
intervals of sunshine & cloudy skies.
March 10th Went up Wallcut Creek
about 2 miles to Mr F's house.
Saw on the way a large owl,* said
to be a common kind - but could not
distinguish the species. The Creek winds
about through alluvial meadows cov-
ered with scattered spruce trees of per-
haps 20 years growth. In the banks
of the creek are frequently seen stumps "in
situ" showing that it was once thickly
timbered. The tide runs in almost
to the sources of these creeks & makes
deep & muddy channels where there is very
little water at low tide. The surface is
covered with coarse grasses in tussocks,
Cattails &c. with Crabapples & other shrubs.
Considerable drift timber obstructs the up-
per parts of the creek. Obtained the two
boys of date, the first seen, they have
been wintering in this vicinity. Their notes
resemble the whistle of the Cardinal but
are slower & less varied. * *S. cinerea*.

76 March 14th Remained yesterday at Mr. F. — —. The weather was clear & warm with a slight hail storm in the afternoon. Obtained no specimens but saw one of the large gray owls & some Red-tailed Buzzards. To day crossed the portage a distance of about 3 miles to Mr. S. where a boat comes at high tide to take passengers for S.W. Bay descending a creek about a mile. Saw no new specimens. The Cedar is abundant here as well as the Spruces so common elsewhere. The stumps of Cedar stand on the meadows of very great age. Stopped at Mr. M.'s for dinner & at 2 started again in a whale boat. Here the Bay is about 6 miles wide & the end of it is nearly semicircular in form the Tasiliit R. entering one corner & the Artesovik at the Southeast. $\frac{4}{5}$ th of the Bay is said to be bare at low tide. The difference of high & low water is 12 ft. At about 6 P.M. we anchored at the South end of Long Island (10 miles long), went ashore & encamped. Obtained here a species of *Nardosmia* in flower. This Island is composed of horizontal beds of clay & sand —

77 March 15th At 2 A.M. the tide beginning to ebb again we embarked & sailed towards the North. The sky was clear & the moon bright at starting but it soon clouded over, rained & continued misty till day light when a N.W. wind again brightened up the sky & the sun shone a little just after rising. Reached the Upernivik beach at Capt. R.'s about 7 A.M. & I went ashore. The tide being low left nearly the whole of this portion of the Bay bare only a few channels running through in the course of the rivers. March 21st We have been here several days and have walked for some miles in each direction along the beach. The country is thickly wooded with large Spruce timber mixed with some Alder in places, & wild cherries. About $2\frac{1}{2}$ miles to the N.E. is a meadow of about 6 miles circumference traversed by a small creek. This ground is thickly covered with grass of good quality. The hills surrounding this end of the bay are rounded & very much cut up by ravines. All these hills exposed on the shore are composed of a hard

78 gravelly clay in horizontal strata
and from 10 to 40 ft thickness exposed
to view in cliffs. Above this is a bed
of gravel in some places conglomerat-
ed by oxide of Iron. This also
pervades the clay in seams. In
some places 40 ft. below the surface
of the clay are strata of wood com-
pressed into thin compact layers but
not petrified. I have seen no traces
of shells. At Strong Point a dike of
Basaltic rock is exposed, lying
underneath the clay which appears
to have been deposited above it.

I obtained no birds until today but
have several species of shells.

March 25th Still at Capt. R. & The wea-
ther since last date has been clear & plea-
sant till yesterday when it became cloudy
and today were some slight showers.
Have shot some specimens as per Cat. the
Redtail hawk is becoming common.

I have not before seen the Duck hawk
the Gull is abundant at this season.

Vegetation is growing rapidly though
but few flowers are yet in bloom Ducks
etc seem to be leaving for the north.

Willappa River

79

March 26th This morning we started in a
sailboat & went 12 miles up the river ar-
riving about 5 P. M. The tide flows up to
this place which is the best terminus for
navigation as the River branches here and
is not always passable above. The banks
are low & marshy almost all the way up
towards the upper part becoming thickly
covered with timber. The hills slope
into the water in some places & are also
thickly timbered with evergreen & alders.

After the first few miles maple & cotton
wood appear with various mountain plants.
Saw wild geese & ducks in abundance &
a few seals which go as far as the tide.

March 27th Remained last night at Mr
W. ——. This morning walked for 6
miles up the valley where Prairie begins
to appear, similar to those seen last summer
in the mountains, but more fertile, and
on the higher grounds covered with fern.

At 2 P. M. descended with the Ebb tide
& reached R. about 8^{1/2}. The valley of the
River above W. is about 9 miles wide and
nearly all tillable. Weather cloudy wind S.W.
showers at intervals both rain & hail.

Copaluc River

Apr 1st Walked two days ago to the mouth of this river crossing two creeks on the way - Near the north bank is a bed of Oysters & other shells several ft. thick enclosed in clay like that all around here. The shore of the Bay is high & steep nearly all the way to the river and the mud flats extend from $\frac{1}{2}$ to 1 mile from them. The river is about 1 mile wide at high tide but the channel nearly central is not more than $\frac{1}{2}$ mile in width.

The Point south of the river is also high & steep, sloping down toward the East, where a creek makes it nearly an Island. The river branches shortly after entering it into three streams.

Remained all night at the Point and next morning returned to Capt R -

The Capt. had arrived the day before. Noticed the "Salmon berry" & a wild currant in bloom. Saw the same birds as on the Willopa. The hills to the East are white with snow which has fallen in slight showers with rain & hail almost every day since last date.

Shoalwater Bay

Apr 7th The weather since last week was very stormy with almost constant rain & wind from the SW till the 5th. Since then it has become pleasant & clear with wind from N.W. & N.E. to day. Have obtained no animals since then but several plants &c. Saw today a striped squirrel the first this spring. The *Tillium grandiflorum* & *Aster* are beginning to bloom now.

The Indians here use the root of a dock powdered & boiled for an application to burns, with apparent benefit. Also the root of *Equisetum Hyemale* as food. It is white raw very hard. They eat also a kind of wild Bean (*Pisum*).

Apr 12th Cropped the bay to the mouth of Cedar Creek & ascended it for about two miles where it branches into 3 or 4 creeks - Along its banks is a great deal of salt meadow as on the others of this bay. Saw on the way several species of ducks, brant & Geese &c. On the north side the shores resemble others but are often steeper & are also in places full of shells of recent species.

82 Apr 14th The weather for the last two days has been stormy & rainy. Today it cleared again & I went to see a point of land about two miles south of the River. This point is level & sandy, covered with a good grass and in some parts with small pine trees. Saw here Pigeons - & several large skates dead on the beach. The channel runs very near this point & towards the west is a large sandy flat filling in the bay nearly to the Cape. Found a blue Violet in bloom & the beach strawberry also. Deer are plenty on this Point.

Apr. 20th The weather has been stormy almost ever since last date. Today I crossed to Cedar Creek again & explored the vicinity on foot. The country much resembles this side of the bay, but vegetation seems to be more forward. Noticed several shrubs & plants in flower & some birds, all mentioned in appendix. Large flock of geese have been for a week flying about the bay, & on clear mornings towards the north.

Apr 25th Yesterday I sailed up the Copaluc River about two miles, but having run aground in a short slough could not proceed & had to wait for the flood tide to return. This river is more branching than the others mentioned, it is like them lined along its banks by extensive salt marshes. Killed on the way a Brant or Grebe & a Robin snipe which I did not obtain.

Apr 28th Yesterday went in a boat up Nekomanche River 12 miles from here & stayed there all night. For about 4 miles it is lined by salt meadows and then suddenly we enter mountain country with high steep hills surrounding. Killed a Surf duck & noticed some species of plants in bloom not before seen. The weather has been pleasant since last date but is now becoming cloudy.

May 8th Since the 28th the weather has been very stormy except a few clear days. Have obtained a few specimens as in Cat. Immense flocks of Terns are now migrating toward the north. Most of the Greese & curlews have disappeared.

84 May 10th The weather has been very bad since last date. Today it is clear & we started to go to The Cape but grounded & had to await the flood. Found crabs in abundance & caught some large flat fish - Saw abundance of Blackcap terns but did not kill any.

May 23rd Today went to Pine Island & obtained several new species of Plants. Weather continues clear for some time.

May 30th Went today to the south end of the bay to see putrescens. Noticed on the water Surf ducks & loons - Nearly all the birds of passage have gone north. Obtained the specimens mentioned in Catalog. On the portage heard several Painted Thrushes singing their single shrill & musical notes in a descending scale by fifths giving it a curious & solemn air. Noticed the Polap tree & P. Harrisii having nests in dead trees with young. Also the *Parus rufescens*. The *Troglodytes bewickii* sings a song like the Blackthroat Bunting. The *Hir. bicolor* seems also to frequent dead trees & deserted holes of birds.

June 8th Went across the Bay to Cedar Creek where I remained three days during a southwest storm - Shot and afterwards lost, a small dove called Gall. Obtained the *Totanus* in Catal which is the only one I have seen here (*T. macularius*) also the sparrow which appears new.

Found cones preserved in the clay banks but so soft as to crumble to pieces.

Noticed *Spirea opulifolia* on the bluffs.

June 11th Returned to day, the weather being pleasant - See the Surf Ducks still in flocks about the Bay.

June 20th Crossed the Bay to Sandy Pt. where I obtained numerous specimens mentioned in Catal.

Found the egg of the Pigeon which is common here, white & in size like that of the common kind - Also the nest & eggs of *Hirundo bicolor* also white. Preserved the egg of No 79.

Some of the plants resemble those seen last year on the plains at Wallawalla.

Copaluc River 3

July 1st Four days ago I went up the above river & remained during a rainy spell which has ended to day.

Obtained the specimens of plants mentioned in Catalogue Saw *Tot. vociferus* & *Mergus Americ.* (young) - Returning I saw flocks of Gadwits returning to the Bay. Examined & sketched five falls on the south branch of the River - Hills rise up steeply from the head of this river.

July 12th Since last date the weather has improved & for a week the sky has been quite clear in the daytime only a thick bank of fog hanging over the sea & land in the morning clearing off by noon. Weather warm but not oppressively cool in the mornings & evenings.

Today Capt. R. & I visited the Cape for a short time. The appearance of this point much resembles the Wallawalla plains & many of the same plants grow in both places. Noticed blackbirds and sand-pipers here. Marshes of Tule grow on the coast in brackish water. Obtained several plants & saw some *Eutamias*.

July 13th Went to Copaluc where I remained all night. Obtained several fossil shells from the clay banks mostly of existing species. The shore along this part has been elevated about 16 ft. above the present high tides and contains beds of fossil shell at that height. Above this is a layer of gravel and sand 4-5 ft. thick containing none. The clay below the shells is perforated by the holes of the *Lutraria* very completely. Weather becoming cloudy.

July 14th Started with Capt. R. up the Bay on the way to Olympia by land. Noticed at the Willapa R. large flocks of Gadwits & snipe also Red head Mergansers. Arrived at W. in 5½ hours about 9½ P.M. Weather continues pleasant.

July 15th Started from W. in boat at 7 A.M. & rowed to Capt. R. where we landed & stayed some time near there to pack a horse. At 10½ A.M. started from there across prairie and made about 15 miles before dark. Having lost the trail we were obliged to encamp on the bank of the River in the woods.

88 I passed through 5 Prairies on the way all very similar to those described before in March. Crossed one hill which resembles in timber &c those on the Capahce R. The bottoms along the R. are densely covered by maple, alder, cherry & spruce & in some parts by Cedar. The river is very crooked with few branches & not navigable more than 20 miles even for canoes.

July 19th Left camp & crossing the River travelled about 10 miles, having to cut the trail until we reached the river again about 3 1/2 P. M. where we met with a trail cut by the Cowitz party. Passed through several prairie resembling the preceding except the last which appears to be at times covered with water, and less firm. Here large numbers of Elk resort and four of them were killed by the party which came through from the Cowitz. The trail goes mostly through level land crossing only one low ridge to cut off an angle. Country similar to that yesterday but there are more Cedar & some fir trees. River continues very crooked & shallow. Weather has been for two days very fine & warm.

Upper Chehalis

89

July 20th Leaving the Prairie at 4 P. M. we ascended the easy slope of the dividing ridge & at sunset reached a prairie on the Chehalis (south branch) called Wobache. This divide is not very high & might be much improved by leaving the Prairie on the west side of the stream (the Willapa). The hills after reaching the branches of the Chehalis are covered with large "Red Firs" - This Prairie resembles those near Vancouver being gravelly & less covered by fern. Most of the flowers are different also from those on the Willapa. The river here is not navigable. The bottom mostly rock (Trachyte) with veins of Quartz. On a branch observed a stone resembling slate. July 23rd Have been for three days travelling over the divide between the Wobache and the Bozfort prairie. The distance is only about nine miles but the timber has been burnt for about three years and much grown over by bushes. By burning out a little it can be made a good route. The hills being not so high as the first divide. Noticed a large quantity of various species of Rubus. Bears are very plenty on these hills now feeding on these berries -

This prairie is about $2\frac{1}{2}$ miles long & $1\frac{1}{2}$ wide of an oval form. In the middle of it stands an eminence of probably 30 feet height from which the whole is overlooked.

Westward, the high summit of the coast Range towers over it about 4 miles distant. To the south & west the hills are lower & to the north it seems quite low but covered with thick forest. Eight families have claims here & their crops are of very good appearance. The soil is very good loam with a little gravel.

On each side of the prairie is a stream and several springs rise in them.

July 24th Left the Prairie early & travelled down along the course of the Chehalis passing through some prairie & crossing the river 7 times. Reaching Noddy at 2 P.M. we eat dinner & rested till 5 when we again started & about 7 reached the Olympia & Cowitz road. This we followed for 3 miles & stopped at Mr C's house.

July 25th Walked today to within 7 miles of Olympia & stopped at Mr Bos. Weather very warm & the road mostly through hot grassy Plains.

Arrived here early this morning having to ride from last night's quarters on account of lameness. This town is built on a sandy point overflowed by the highest tides, & nearly at the head of the Sound about one mile from deep water. The forest surrounds the shores completely being chiefly of Fir.

28th Arrived at Fort Steilacoom having left Olympia in a boat last evening. This site is much better the shores being bold & the land higher. A mile from the town the Prairie begins similar to those near Olympia and with mounds visible on many portions. The soil is mostly of gravel and small boulders & the trees are the same.

30th Rode about ten miles around the country mostly through Prairie with a few scattered oaks and Firs. Many lakes lie in the hollows the largest about seven miles long. They are commonly deep & the water cold though often without any visible outlet. Several species of Lemmings etc live in them and I found a small Eagle.

92 Aug 13. Fort Steilacoom
Have walked some distance around
here since last date. The country ev-
erywhere seems to consist of terraces &
Plains covered in many places by the
mounds above mentioned and cut up by Ca-
nons through which the streams run.
No beds of rock appear south of the Puy-
allup river. I have obtained a number
of specimens mentioned in the Cat.

The weather has been very warm the Ther-
at 94° one day & a shower fell one night.

Aug 21st Left Steilacoom in a canoe
about 12 M with Lt. S. Col. W. & a crew
of five Indians. Weather clear and
cool. Three days ago it rained for a-
bout 24 hours soaking the ground well.
This part of the Sound is much cut up
by small islands with forest and prairie
mixed. On some are lakes also.
Game & fish are abundant on them.

Arrived at Olympia about 10 P. M.

Aug 22nd Travelled on horseback from
Olympia about 20 miles, leaving at 4
P. M. Stopped all night at Grand Mound
Prairie. Weather warm but cool nights.

Cowlitz valley 93

Aug 23rd Rode through to the Cowlitz
Landing and arrived just before dark
having started about sunrise.

The country for about thirty miles from
Olympia is similar to that near Steilacoom.
The soil gravelly but improving as we
approach the Chehalis river.

From this south, following the valley
of the Chehalis is level & rich soil but
subject to overflow from the obstructions
in day rafts on the river below.

Creeping from this to the Cowlitz there
is ~~no~~ high ridge between them & the
country continues similar until near
Cowlitz farm when the soil becomes
more of clay. Here the Red Fir is replaced
mostly by two others on the river banks
& a small pine also occurs similar to that
on the coast (*P. distorta*). The deciduous
trees are the same *Cornus*, *Acer*, *Alnus*, &c.
The Cowlitz here seems very rapid and
its color milky blue from a mixture of
white clay during the summer floods.
These have just subsided about 6 inches.
The valley appears extensive & beautiful
and is very fertile.

94 Aug 24th Left this M^{orn}
in a canoe & travelled down the Cow-
litz arriving at Rainier late in the
afternoon. The navigation is danger-
ous even now from the great numbers
of snags and rapids in the river.
Found at R. Capt. R. - a going down
next day so that I concluded to stay.
The mountains here border the river
valleys, alternately on each side while
the bottom lands are sandy & subject
to inundation. Cottonwood & willow
are the principal deciduous trees & the
hills are covered with evergreens.
Noticed the Fish hawk? the first seen.
Aug 25th Started from Rainier as above
& descended the river about 20 miles -
camping at dark on the north shore.
For the last ten miles cliffs of Basalt
occur at intervals each side where the
river passes through a range of Mts.
These are very gradual in slope & resem-
ble roofs in many places. The cliffs are
columnar basalt of various qualities all
perpendicular & in several layers.
Noticed quantities of a species of Len-
eis like those caught in the Willamette.
Heard flocks of Geese this evening.

95 Aug 26th Started at day light
& travelled on about ten miles stop-
ping on the north of Chinook Point -
on account of the roughness of the Bay-
view. St. Gray's Bay ~~Sandstone~~?
appears & continues down to Chinook
the rock being apparently metamorphic
and without fossils. Saw here
the lizard No 11 of coll. 1853 among the
logs along shore. Also a species of
Gadus dead from surfishing on small
herring. Weather squally & showery.
last night there were thunder & lightning
in the south. Noticed Cormorants.
Aug 27th Continued to the Postage on
the Wallacut where we arrived at noon.
Soon after, it began to rain & continued
to do so all day & part of the night.
Bakers Bay is here dangerous to sail
across & generally rough at all seasons.
Aug 28th Crossed the Postage to Martin
Shot some specimens here & saw the Cana-
da jay in a small flock among the trees
whistling loudly like a Parrot.
Its flight & habits resemble that of
the Steller jay with which it associates.
Saw also Marsh hawks & "Buteo swainsoni?"

96 Aug 29th Left Am - s and tra-
velled in a whale-boat down the Bay
arriving at Capt. R - s about 8 P. M.
A heavy fog misted us & we were
obliged to anchor for three hours
near Goose Point. A high wind also
blew after 10 A.M. dead ahead.
Noticed flocks of Ducks Godwits and
3 toed sandpipers 2 Pelicans and some
loons -

Sept. 2nd Since last date I have
remained at Capt. R's arranging coll.
To day, walked to the Duquellin but
got nothing. Saw some very large brown
birds (Vultur?) Saw also the Tringa
Membris 72 which whistles like the G. legs.
I observe none of the birds mentioned
in Appendix, which have probably gone
southward. Weather continued cloudy
with some rain. Wind mostly from N.W.
Sept. 5th The past three days have been
very hot & yesterday evening it clouded
over & now threatens rain. Went to Pine
Island where I obtained a Gull. (L.
Belcheri) which with other species and
a black-capped tern are abundant now
on the bay - Also shot a Yellow leg.

97
Ship & Alpine Lark, the last quite an
common here - Observe that great
flocks of Godwits, ducks &c fly out at
the very first commencement of the
tide to their feeding grounds on the
flats & about $\frac{1}{2}$ flood return to the
river to wait for the next low tide.
Caught several Cott' on the 6th with
meat for bait, resting it on the bottom.
Sept. 12th Went to Sandy Pt & obtained
the specimens in Est. Saw a flock of Pe-
licans near the mouth of the Bay, shot
at a dozen of which a few are in the Bay.
Weather lately clear & cloudy alternately
Flight rain fell last night.
Sept 18th Sky continues mostly cloudy
with little rain. Have been nowhere since
the last date. Pelicans now enter the
bay often after first & in stormy weather.
Notice a small black bird frequenting
about birds & snags (Streptopelia)
Sept 24th Two days ago went up the Willa-
pa with Mr B. - m. & leaving the ship at
Capt C - s we went to R - s to sleep.
Shot a beaver in the river high up. Return-
ed yesterday afternoon. Saw some large
black woodpeckers (P. pileatus?)

Sept 20th Crossed with Mr B. to the Cape arriving at W's house about dark. Noticed on the way a white & mottled duck which flew away rapidly, also some cormorants & Pelicans. Salmon & other fish are jumping continually. Saw no new kinds of birds at the Point.

Sept 21st Remained at W's house. Morning rainy. P.M. went across to the Cape shot 2 Pigeons & a grouse. Caught a large number of Fish (Cottus sp.) which live at salt salmon etc. Also obtained some *Eutima concinna* & *Helices*.

Sept 28th Walked round Sandy Point to hunt deer but saw none. Tracks are abundant. Returning shot two Snipe & a Marsh wren which was spoiled. *Tringilla* — ? & *T. leucophrys* abundant.

Sept 29th Last evening hunted deer by moonlight but did not see though I heard some run off. Saw a *Sturnella* & several *Pipilo oregonus*. Started at flood tide & returned to Capt. R's.

Worked out with a small party a good prospect of fine gold near the Cape.

Oct. 5th Went up the Willapa as far as Capt. K. & returned the same day. Obtained the specimens in Catal. The Podiceps is the first of the species I have seen. It was swimming along the edge of the river & rose at my first shot which cut its bill so I observed when it rose, for it did not fly but trusted entirely to diving.

Its stomach contained only a thread like weed. The gull was common among others since the middle of last month. Saw on our return great flocks of Pelicans sitting on the flats but I could shoot none. Wind south, weather very squally with showers but occasional calm at sunset.

Oct 11th Have remained at home since last date. The Pigeons shot on 9th is the first I have seen & the other is rare.

Their habits seem to resemble closely those of *P. Harvina*. Weather delightful with N.E. wind & little clouds flying.

Had two heavy white frosts on the nights of the 7th & the 8th but they did not injure vegetables here. Most of the seabirds leave the Bay on fine days so that I can get but few of them.

100 Oct. 24th Have been up the Kaskichee fishing for trout & caught a few of them. Noticed Gair. Canadensis in small families very familiar & coming down on the boat to steal salmon. Also abundance of the Mergansers with red heads, about the bay & river. Returning saw a large white necked grebe, besides plenty of brant &c. The weather which has threatened rain some time past to night became stormy with a high S.W. wind.

Oct 30th Since last date we have had a storm for three days but it has now cleared off finely with a N.E. wind. Cropped over alone to the Cape and walked to the beach which is very wide at low tide. Near it the sand hills are covered by fine grass forming ridges which run parallel towards the N.W. The hills here being about two miles from the sea. Saw no birds on the weather beach. Went to the lake where I shot a white face goose, Shoveller & widgeon. Besides the specimens in Catalogue. Noticed a bird resembling the Coot among the cat-tails & reeds.

101 Oct. 31st Cropped over last night to Sandy Point. This morning shot three Brant. Two Hawks &c. Noticed large flocks of Meadow larks, which were singing beautifully. Killed a large blackish hawk. Returned about noon to Capt. Ross. Nov 1st The sparrow owl is a diurnal & in flight resembles closely the sparrow for which I at first mistook it. The Gulls shot on 30th differ in size 2 inches but in color only in the smaller being pure white on head and tail. Nov. 1st Cropped over to the Cape. I walked some distance around the lake &c. Saw the bird seen Oct 31st (Coot) which ran rapidly through the cattails & flew heavily a short distance so I could not get a shot. It is as large as a small hen & makes a shrill squeak. Nov. 11. Remained all night on the Point. At daylight went to hunt deer but saw none. Shot two white face geese. After breakfast cropped over to Sandy Pt. I walked about sometime but got nothing. In the Evening rowed across to the house. Weather since 1st mostly very fine with N.E. wind and some clouds.

102 Nov 18th Today went over to Sandy Hook - Shot a Butcher Bird -
Hailed to Cedar creek and tried to catch trout with salmon, but none bit -
Saw plenty of salmon jumping, which are said to be of the Quinalt kind -
Noticed a flock of Whooping swans -
At dusk returned to Mr B - 2 -

Nov 19th Walked out & shot some Crossbills which have been about from the Bay since middle of June -
Flocks of Meadowlarks are common here now also Colaptes & Anthus -
The Kelp washed up here brings large & worn pieces of basalt as large as a mans head some with veins of quartz -
Kelp does not grow in the Bay -

Nov 21st The storm which has so long threatened began last night with a violent S. E. wind & heavy rain -
To-day it is clear with wind N.E. -

Returned across to Capt. R - 2 -
Nov. 24th For two days we have had a most violent gale from the S.W. & S.E. with the highest tides this year which have destroyed much property - They have inundated all the tide lands -

103 Nov 30th Since last date the weather has been squally & rainy till yesterday when it cleared off warm -
Went to Pine I. & shot a Linnet. Saw several large owls in the grass (Cetus) -
Have been since 21st writing notes & packing a box for Prof. B - 2 -

Dec 5th Since last date weather has been clear & cold with heavy white frost at night and ice for two nights past to in thick, which did not melt in the shade all day -
Have been at home finishing notes & -
Dec 22nd Since last date I have remained at home having no time to go after specimens. The weather has been clear & cold with heavy white frost at night until the new moon yesterday when it became cloudy & today has rained hard nearly constantly -

Very few birds seen to be now about the Bay - ~~Common~~ Brant, Loons, & wild ducks, being all in the water - Fish crows Jays & Flickers with Pine Linnet are the land birds I see about the house - Noticed a Newt on the 21st creeping about, just after the thaw commenced -

Dec 29th The storm has continued unabated since last date with heavy hail thunders & lightning mostly at night, with the winds shifting from South to West until yesterday, when it changed to South and became warmer, but with an almost constant rain. This wind brought the tides very high in the North Bay and this morning the sea has washed away everything in front & ~~swept~~ over the whole ground around the house.

Noticed a few days ago a bird of the size of a *Sylvicola* with three broad yellow stripes on the top & side of head. It seemed to be pursuing insects.

To-day saw a Snipe (No 28) flying about the house & marsh behind it. Perhaps the same one seen here in Oct.

W. H. S.

108

109

168

169

1106

1106

112



113

114

E

D

B

C

115

A

E

D

Index of Collections.

Date Birds Rept. Fish. Plants Minerals &c.
 July 5th 1 snake & 1 within 2 miles of the
 Fortuna Columbia 2 " 5 barracks common
 " " 3 Bag 6
 " 20th 2 Pine Squirrels near Vancouver
 " 21st 2 snakes grayish like no 3
 " 27th 3 Crayfish dark greenish black below reddish
 " 29th 1 snake brown dors. etc. br lat. spots Y & br.
 " " 1 " nearly blk " " " stripes lighter
 " 29th 1 shrew from pine forest in same bag (pink
 " 30th 3 lizards brown head & olive spots blk. below
 Aug 1st 1 snake back blk. belly grn, stripes & spots red
 Aug 31st 2 newts blk brown & fish grayish, fins R tip'd
 Aug 2nd 2 snakes caught in the same spot & in 1 bag.
 " " largest blk. gr. & stripes, brown spots belly gr.
 2nd " br. Y " chestnut " " bluish
 3rd " " Y " reddish " " grayish
 4.5.6. dark br R. " black. " " "
 checks of 1 - 3 brown & grn of others br. & blk.
 " " 1 newt brown, belly yellowish R.
 " " 2 trout, back gray olive belly silvery spots blk.
 " 4th 2 lizards, olive brown, spots blk, 3 Y. squirrels
 " 5th 2 young trout & tadpoles from a pond
 " " 1 newt, dark brown belly orange
 " 9th 1 Pine Squirrel striped (very common)
 1 wood frog light green legs & beneath

118
Date B. & L. R. & F. P. & M. H.

- Aug 11th / mouse 12* 1 tree frog St. Hairs, spots brown.
 " 12th 1 snake blk, stripes Y. belly ash color.
 " 13th Great Canadianis head.
 " 17th 1 horned toad, grayish brown, spots blk.
 " 18th 1 horned toad black red.
 " 15 1 Bgg canion. Purple-brown, pale below straw Y.
 " 16 1 " 5-6 duller colored but similar.
 " 20 2 Antipodoni 7 1/2 - 5 - 16 Eye chestnut legs gray.
 " 25 1 Pit. Wilkeii ground pale gray & as descr.
 " 30. Crotalus lucifer head.
 " 31 1 Shrew black - 1 Badger.

The above are to day sent to F. H. Vancouver -
 per care of Dr. Benson of H. B. Co.

- Sep 4th 1 Magpie 17-18 Iris black bill & legs ad.
 " 4 1 Buteo borealis 22-48 i. hazel cere & " yellow.
 " 5th 1 Nucifraga 19-11 bill feet black Iris brn.
 " 3^d 1 Pit Wilkeii 1 Eutamia dark brn spots blk.
 " 6 1 Trout, silvery fins ol. spots blk. pect. orange.
 " 1 Eutamia like the last gr. brn spots blk.
 " 7. 1 Nucifraga 11-20 1/2 1 Starling 20-30 & s.
 " 14 trout 12 1/2 in - 6 back dk olive, light toward
 tail, belly silvery & with operc. shaded rose -
 (not permanent) carmin. streak on each jaw -
 lips gold green I. gold blk P. fins ygr. V. bluish.
 St. gmsk, tail dk grey, spots blk, Dors lighter.
 " 14 trout 12-4 1/2 spots white on side pink tail rose.

119
Date B. & L. R. & F. P. & M. H.

- Sept 14 Sage fowl 27-44 I brown - adult male.
 " 10 1 sucker from lake Klealm female 1 ft long
 color dull olive, belly white.
 " 16 1 fish 13 1/2 5 1/4 M back gray mixed, I. yellow.
 " 16 1 " 8 entire, dark greenish blk, belly lighter.
 " 18 3 snakes, back olive, spots blk, belly slate & blk.
 " 20 1 horned toad, reddish brn belly white.
 " 21 1 snake back pale, dull gr. belly straw Y.
 " 22 1 Trout head gray blk & dull wht 18-8.
 " 22 1 salmon. " " " " 24-10 1/2.
 " 16 1 sage hen 22 1/2 - 33 I brown adult F.
 " 25 1 Cr. Leg. Sea green, marks & belly white.
 " 27 1 Strix Virg 52-27 I yellow.
 Oct 27 1 woodpecker (Flanisi) 9-15 1/2 I & bill brn M.
 " 28 1 Pic. affinis 9-15 " & " brn. M.
 " 30 Pine Squir. 14-4 1/2 Rad & Tib 1 1/2 Male.
 " 30 1 Otus 38-15 1/2 Iris Y cere & legs do. M.
 " 31 1 Tetr. phas 16 1/2 - 24 1/2 " Brn - F.
 " 31 1 mouse 6 in ear 5/8 Rad 5/8 Tib. 7/8 eye black.
 Nov 1st 1 woodpecker (albolar) 9 3/4 - 17 Iris brn.
 " 12 1 Otus 4 1/2 - 38 I. yellow feet blk.
 " 13 1 Podiceps occid. 24-37 I orange & greenish.
 No. of Birds sp. 16 Rept. - 49 Plants 60?
 entire - 22 fish - 20
 heads 4 " sp 10. coll of 1853
 " Inad. 3.
 dupli. 3.
 11

120

Date B. & A. R. & F. P. & C. M. & C.
 not preserved
 Dec 29 2 Pip. Creg. 8-10 Iris hazel legs drab gr.
 " " 2 Niph. Creg. 6-9 " black bill flesh legs br.
 Reg. Calend. 4-7 " " deep dk br. feet yell.
 Trag. Bewick 5 $\frac{1}{4}$ -7 " " " gray Bill blk & w.
 Parus Carol. 4 $\frac{3}{4}$ -7 $\frac{1}{2}$ " " " pale gray " "
 " 30 2 Niph. Creg. 12 $\frac{1}{2}$ -22 $\frac{1}{2}$ " " " " " " "
 " 31 Pic Harris 9 $\frac{1}{2}$ -16 $\frac{1}{2}$ " " " " " "
 Jan 9 Colap. Mex 13 $\frac{3}{4}$ -23 $\frac{1}{4}$ " dove col. I. brown
 " 12 " " 13 $\frac{1}{2}$ -21 " " " " " "
 " 13 2 Loc. vesp. 7 $\frac{1}{2}$ -13 " pale hen " " "
 " " 2 " " 7 $\frac{1}{4}$ -12 $\frac{3}{4}$ " " " " " "
 " " Tet. umbel. 18-23 " gray " " " "
 " 18 Fring. Towns. 7 $\frac{1}{2}$ -11 " brown bill blk & y.
 " " Carp. purp. 6 $\frac{1}{2}$ -9 $\frac{1}{2}$ " " " " " "
 " 19 2 Tur. voc. 9 $\frac{1}{2}$ -15 " flesh col. B. blk. I. dk
 " " Fring. Towns. 7 $\frac{1}{4}$ -9 $\frac{1}{2}$ " brown bill blk & yel.
 " " Pip. Creg. 8 $\frac{1}{4}$ -10 $\frac{1}{4}$ " " " " " "
 " 23 Quis. mexic 9 $\frac{3}{4}$ -18 $\frac{1}{4}$ " " " " " "
 " 26 2 " " 9 $\frac{1}{2}$ -14 $\frac{3}{4}$ I. hazel other smt
 " " Agelai. Phoen. 8 $\frac{1}{4}$ -12 $\frac{3}{4}$ " " " " "
 " 30 Tur. voc. 9-12 $\frac{3}{4}$ " brown legs yell.
 " " Garr. Stell. 12 $\frac{1}{4}$ -18 " " " " "
 " " I. town mayl 10-15 " " " " "
 " 31 Garr. Stell. 12 $\frac{1}{4}$ -18 " " " " " "

1853 Observed
 Date B. & A. R. & F. P. & C. M. & C.
 June Hal. leucoc. Enys, species - Eutamias
 15th Carr. Amer. Col. Carol. C. fasciata salmon
 to Ft Vancouver
 July Lepus - Tamias - Sciurus
 28th Anas boschas A. sponsa, Ardeas Flamingo
 Carpod. - Hirund. falca. Tetras mab.
 Pic torquatus Hir. bicolor. Pipilo Gregorius
 Garr. Stell. Falc. sparv. Alced. Hoyer
 Colap. Mex " Columb. Alced. Ludovic
 Agelaius Phoenic. Chordeiles Virgin
 to Charad. vocif.
 August Tet. obscurus T. phasianellus, Trout
 and " Urophasianus Pica Hudsonica
 Sept. Texus Salicadensis
 1854 Ft. Vancouver
 January Col. Mex. Parus 3 sp - Cygnus Americ.
 first Anas Canadensis. Corvus callosus
 to Carr. Americ. Lepus Wash. Sciurus
 Larns - Anas boschas A. acuta
 Anas Huttonianus Anas valisineriana
 other bird as by Catalogue opposite
 Bewick's Wren the winter Wren
 Feb 20th

124

Date	L & B	B & F	P. & C	M & H
Aug 30	⁸⁶ Syl. stud. $5\frac{3}{4} - 8\frac{3}{4}$	Brown	St. & black	
"	⁸⁷ Trich. delap. $5\frac{1}{2} - 7$	"	"	upale brn.
"	⁸⁸ Fring. sava. $5\frac{1}{2} - 8\frac{1}{2}$	"	"	" flake brn.
Sep 6	⁸⁹ Trich. del. $5\frac{1}{2} - 7\frac{1}{4}$	"	"	" pale brown
"	⁹⁰ Larus Bel. $20 - 42\frac{1}{2}$	"	bluish gy	Bill. Carmin.
"	⁹¹ Staud. alp. $14 - 12\frac{3}{4}$	"	brown	B. blk. white
"	⁹² Tot. vocif. $14 - 23\frac{1}{2}$	"	"	Bill. grey. L. yellow
"	⁹³ Pic. Hauri. $9\frac{3}{4} - 16$	"	"	hazel feet bluish
"	⁹⁴ Lar. Bel. $20 - 43$	"	"	" like above
"	⁹⁵ Uria lomg. $9 - 16\frac{1}{4}$	"	"	B. blk. H. pinkish
"	⁹⁶ Parus etric. $5(\frac{1}{2}) - 7\frac{1}{2}(\frac{5}{8})$	"	ln St. & B.	blk. Long
"	⁹⁷ Syl. stud. $5\frac{1}{2} - 9$	"	"	"
"	⁹⁸ 2 Anth. $5\frac{1}{2} - 10\frac{1}{4}(\frac{1}{2})$	"	"	Bill. & blk. & br.
"	⁹⁹ 14 Cor. ossif. $16\frac{1}{2} - 33$	"	"	"
"	¹⁰⁰ 23 Sturn. aud. $11\frac{1}{4} - 16\frac{3}{4}$	"	"	brn. legs. 7 ^c flake.
"	¹⁰¹ " " ⁹⁸ et. fusc. $11\frac{1}{2} - 21\frac{1}{2}$	"	"	Bill. B. blk. & gray
"	¹⁰² 28 2 Scol. Wils. $10\frac{1}{2}(\frac{1}{2}) - 16(\frac{1}{2})$	"	"	brown " brn. blk.
"	¹⁰³ " " Fring. (m.s.) $6 - 10$	"	"	" blk. H. flake.
"	¹⁰⁴ " " Shep. Ant. $9 - 18$	"	"	" blk. for blk.
Oct. 5	¹⁰⁵ Pod. Calif. $13\frac{1}{2} - 24$	"	"	"
"	¹⁰⁶ " " Phal. Cash. $34 - 51\frac{1}{2}$	"	"	brn. blk. & F. blk.
"	¹⁰⁷ " " Lar. zonor. $22\frac{1}{2} - 55$	"	"	B. & F. pale gy
"	¹⁰⁸ " " 7 Pic. Gaird. $6\frac{3}{4} - 11\frac{1}{2}$	"	"	red brn. " & H. blk.
"	¹⁰⁹ " " 9 " ruber $9\frac{1}{4} - 15\frac{3}{4}$	"	"	brn. B. & H. paler
"	¹¹⁰ " " 13 Lar. " $18 - 41\frac{1}{2}$	"	"	" " flesh blk. tips
"	¹¹¹ " " Lar. Occid. $24\frac{1}{2} - 54\frac{1}{2}$	"	"	" " " "

Date L & B B & F P. & C M & H

Garr Canada

Mammalia coll. 1859

Oct 2	19	Arvic. 8-4	foreleg 2 $\frac{1}{2}$	hind 2 $\frac{3}{4}$	as ant
Sept 13	"	" 7 $\frac{5}{8} - 4\frac{1}{4}$	"	"	Ear 3- $\frac{1}{2}$ H. blk.
"	20	Felis	34	Foreleg 18	hind 20 tail 6.

Date L. & B. R. & F. C. & M. & K.

- Oct 12 Linar. ¹⁰⁷ min 5 1/4 - 8 1/2 d. brn B. & F. grey brn.
 " 18 Fring. ¹⁰⁸ gutt. 8 1/4 - 8 1/2 " " " brn & pale yellow brn.
 " 30 Lar. occid. ¹⁰⁹ 24(5) - 57(5) " " " grey & ft. flecked col.
 " 31 chick ¹¹⁰ Lag 22(31) - 52(0) " brown B. slate & y. ft.
 " " ¹¹¹ Trog. palust. 5 1/4 - 8 3/4 " brn. B. slate & ft. brown.
 Nov 1 Hum. passer. ¹¹² 7 1/2 - 14 " " " " " paler.
 " 18 2 Lar. hor. ¹¹³ 10 3/4 - 14 1/2 " brn " brn & bk ft. blk.
 " 19 Curvir. ¹¹⁴ str. 6 1/2 - 11 " " " " ft darker.
 " " " 6 - 10 1/2 " " " " not preserved.
 " 21 ¹¹⁵ str. albig. (Head) " brn. B. fleck. & y. ft. or.
 " 25 Merg. ¹¹⁶ 2 1/2 - 18 1/4 " brn. B. & ft. blk & or.
 " " ¹¹⁷ Phal. ¹¹⁸ 8 3/4 - 18 " " B. blk. & y.
 " 28 ¹¹⁹ V. ¹²⁰ sent to Washington - by Express.
 " 29 Linar. ¹²¹ min 5 1/4 - 9 " brn B. yel. ft. blk.
 Dec 6 Lar. ¹²² occ. ¹²³ 23 1/4 - 54 " dk brn B. blk. ft. brn.
 " 7 1/2 ¹²⁴ col. ¹²⁵ hor. ¹²⁶ 20 - 30 " black. bill & y. bl. & blk.
 " ¹²⁷ Lar. ¹²⁸ mig. ¹²⁹ 3 1/2 - 85 " brown bill blk & y. purp.

Date Plants collected 1854

- 1st Mch 15 *Nasdosmia palmata* Compositae W²th
 2nd " 20 *Salix Scouleriana* Bac Salicaceae Y¹⁵
 3rd " " *Amus Oreganus* Ammentaceae Aug 40
 4th " 25 *Dentaria tenella* Cruciferae W. vds. 1/2
 8th Apr 1st *Trillium grandiflorum* " W " 2
 9th " *Ribes saxiflorum* Grossulariaceae Gr. Pu. 8.
 10th " *Rubus spectabilis* Rosaceae " vds
 5th Mch 26 *Ribes sanguineum* Grossulariaceae R. mto.
 6th " *Cynthyris reniformis* Berth. Bl. prairie
 7th " *Hythalia caryophyllifolia* " " 10 W
 11th Apr 8 *Sicentra formosa* Tamaricaceae Pu. vds 1
 12th " " *Gymnocarp. Ematt* that *Aroides* X swamp
 13th " 13 *Viola canina* (var) *Violacea* Bl. prairie
 " *Pinus contorta* Coniferae Y. 30 sandy vds
 14th " 21 *Fragaria chilensis* Rosaceae W coast
 15th " " *Barbarea vulgaris* Cruciferae T. msh
 16th " " *Arabis* " " Ce. prairie
 17th " 22 *Acer circinatum* Aceraceae vds 40
 18th " *Trillium grandiflorum* " " W. prairie
 19th " *Lonicera involucrata* Caprifoliaceae marsh
 20th May 2 *Ribes bracteosum* Grossulariaceae stems
 " *Maestrichtum palustre* Cruciferae 2 marsh
 21st " *Viola glabella* Violaceae Y vds
 22nd " *Heuchera micrantha* Saxifragaceae " 2
 23rd " *Pyrola uniflora* Ericaceae W " "
 24th " *Carex Schreb.* Cyperaceae Gr. marsh
 25th " *Chamaenerion* (Blaytonia) Saxifragaceae W shores

- Date L & B. R. & F. P. & C. R. & K.
- May 3²⁶ *Asabis hirsuta* Cruciferae W. field.
- 27²⁷ ~~*Menziesia ferruginea*~~ Ericaceae Pu. woods
- 28²⁸ *Cardamine angulata* Cruciferae W. woods
- 29²⁹ *Cerasus mollis* Rosaceae W. hills 30
- 30³⁰ *Smilacina bifoliata* Liliaceae W. woods
- 31³¹ *Sambucus pubescens* Caprifoliae W. woods 12
- 32³² *Ribes divaricatum* Grossularae Pu. sandy
- + 33³³ *Rubus Nutkanus* Rosaceae W. woods
- 34³⁴ *Salicornia subulacea* Chenopodiaceae near ls
- 35³⁵ *Vicia gigantea* Leguminosae Pu. coast
- 36³⁶ *Claytonia Hainoides* Portulacae W. woods
- 37³⁷ *Acer macrophyllum* Aceraceae Y. woods 50
- 38³⁸ *Gaultheria Philon* Ericaceae Pt. " 10
- 17 39³⁹ *Menziesia ferruginea* " Pu. " 10
- 40⁴⁰ *Lathyrus maritimus* Leguminosae Pu. shores
- 41⁴¹ ~~*Prosopis*~~ *Menziesia* Liliaceae W. woods
- 42⁴² *Smilacina bifolia* var. *longe* " W. " "
- 43⁴³ *Panax horridum* Araliaceae Cr. " 10
- 44⁴⁴ *Carex megacarpa* Cyperaceae shores
- " 23⁴⁵ *Lupinus affinis* Nothofagaceae W. shores
- 46⁴⁶ *Strophila littoralis* (Crocus) PW " "
- 47⁴⁷ *Trifolium heterodon* " P " "
- 48⁴⁸ *Bartsia pallida* Labiatae Se. " "
- 49⁴⁹ " " Gramin. Cr. " "
- 50⁵⁰ " " " " "
- Streptopus amplexifolius*

- Date L & B. R. & F. P. & C. R. & K.
- May 23⁵¹ *Arbutus Menziesii* Ericaceae Pt. coast
- 52⁵² *Vaccinium ovatum* " woods
- 53⁵³ *Heraclium lanatum* Umbellif. W. sand
- 54⁵⁴ *Amisckia Lycopoides* Boraginaceae Y. " "
- 55⁵⁵ *Claytonia perfoliata* Portulacae W. "
- 56⁵⁶ " " " " "
- 57⁵⁷ *Abies conadensis* Coniferae Y. woods
- 58⁵⁸ *Plectritis congesta* Valerianaceae W. shores
- 59⁵⁹ *Platanus rubrum* " " Pt. " "
- June 4⁵⁸ *Chrysopsis glechonoides* Saxifragaceae Y. woods
- 67⁶⁷ *Potentilla Anacardium* Rosaceae Y. shores
- 12⁶⁸ *Rubus macrocarpus* " W. hills
- 14⁶⁹ *Galium triflorum* Rubiaceae W. " "
- 61⁶¹ *Stellaria crispata* Caryophyll. W. " "
- 62⁶² *Carex ~~foveolata~~ ^{brongniartii}* Cyperaceae Cr. " "
- 63⁶³ *Clenchera micrantha* May 2.
- Gramineae "
- 12⁶⁴ *Tiarilla trifoliata* Saxifrag. Y. woods
- 65⁶⁵ *Scrophularia nodosa* Scrophul. Pu. shores
- 16⁶⁶ *Rosa pratincola* Rosaceae R. woods
- 67⁶⁷ *Lotus* " Cr. woods
- 20⁶⁸ *Hosackia pauciflora* Leguminosae R. woods
- 69⁶⁹ *Crucian arvensis* Caryophyll. W. " "
- 70⁷⁰ *Hieracium alliflorum* Compositae W. " "
- 71⁷¹ *Plantago maritima* Plantagin. Cr. woods
- Lycopodium obscurum* Lycopodiaceae " "

Comparison of species of *Salmon* R.
 Yellow trout. F. shot 29th Feb. 1894. Shot at Trout
 Length 9 1/4 in. D. blk. ... 12

To 1st dorsal fin 10 1/2

base of " " 2 1/2

To caudal " " 2 1/2

base of " " 2

To root of tail 2 1/2

Pelvic - to pectoral fin 4 1/2

base of " " 3 1/4

To abdominal " " 12

" " " " 17

base of " " 2

To end of tail 23

Girth at dorsal fin 10 1/2

" " tail 4 1/2

Form slender rounded head
 dark line spots black, sides
 silvery with greenish tinge
 belly silvery white, no pale yellow
 head shortish, large eyes
 Not found below Cascades?
 young's larger than some

Trout ...
 3 ...
 2 ...

...
 ...
 ...

#14 ...
 #15 ...

(May 2 ... X 2 1/2) ... May 9th
 June 10 ... X 2 (5-10) X 2 1/4

#16 ...
 Aug 31 ... X 4 " " 2 1/4
 Sept 7 ... X 5 ... 5 1/2 tail 8 1/2

[illegible]

- June 20 ⁷² *Glaux maritima* Primul Salt marshes
 " " ⁷³ *Antirrhinum Virginicum* Scrophular Sandy shore
 " " ⁷⁴ *Stimulia vulgaris* Polygona ~~Pennsylv~~ " "
 " " ⁷⁵ *Calystegia Soldanella* Ranunculaceae Pu " "
 " " ⁷⁶ *Gramineae* P. ex " "
 " " ⁷⁷ *Plectritis congesta* Valerian Fl 2 " "
 " " ⁷⁸ *Cymopterus littoralis* Umbellif. W. gray " "
 " " ⁷⁹ *Peucedanum leiocarpum* " Y " "
 " " ⁸⁰ *Althaea arvensis* Rosagraceae Dry " " fl. orange
 " " ⁸¹ *Disgrinchium Pennsylvanicum* Scrophul B " " Lacinated
 " " ⁸² *Veronica scutellaria* Scrophul B. " " "
 " " ⁸³ *Lathyrus Palustris* Leguminosae P. " " water
 " 27 ⁸⁴ *Veronica Anagallis* Scrophul B high wood
 " " ⁸⁵ *Corydalis Scouleri* Fumariaceae P. with streams
 " " ⁸⁶ *Megorhiza Oregona* Cucurbitaceae W rich woods
 " " ⁸⁷ *Gemma macrophyllum* Rosaceae Y damp woods
 July 1 ⁸⁸ *Artemisia amplexifolia* Comp Y Mtn streams
 " " ⁸⁹ *Stachys ciliata* Labiatum P " sides
 " " ⁹⁰ *Claytonia parvifolia* Portulacae P wet boggy etc
 " " ⁹¹ *Carex Hitchcockii* Cyperaceae In salt marsh
 " " ⁹² *Gramineae* " " "
 " " ⁹³ " " " "
 " 3 *Juncus* 5 sp. *Juncaceae* Y brackish
 " 100 *Spiraea* *Arnica* ¹⁰⁷ Rosaceae W hill side
 " *Pennsylv* ¹⁰⁸ *Polygonum* P. 4 damp marsh
 " *Adiantum pedatum* Filices Br. " woods

July 6 101-106

Filices Bk Larkwds

" Is " "

- " 10 ¹⁰⁹ *Juncus pusilla* Umbellif Sandy Brook
 " ¹¹⁰ *Epilobium coloratum* Uragrac P " "
 " ¹¹¹ *Smagolium decurrens* Ranunculaceae " "
 " ¹¹² *Fraxinea pinnatifida* Composit Y " "
 " ¹¹³ *Legusticum Scoticum* Umbellif W 4 brack marsh
 " ¹¹⁴ *Asynanthium deflexum* Brassic Y 4 sandy prairie
 " 12 ¹¹⁵ *Leguminosae* Pu " shore
 " ¹¹⁶ *Lonchocarpus asper* Composit Y 3 " field
 " ¹¹⁷ *Stachys trisulcata* Scrophul W 3 " "
 " 12 ¹¹⁸ *Spiraea Douglasii* Rosaceae P 5 damp prairie
 " ¹¹⁹ *Epilobium tetragonum* Uragrac P sandy " "
 " 13 ¹²⁰ *Juncus Huronensis* Composit Y 1 " "
 " ¹²¹ *Achillea Millefolium* " " W " "
 " *Juncus Balticus* Juncaceae Br. wet grounds
 " 122 *Comarum palustre* Rosaceae Pu " "
 " ¹²³ *Pida maliflora* Malvaceae Pu 6 " "
 " 124 *Cyperaceae* Y " "
 " ¹²⁵ *Urtica gracilis* Urticaceae " 4 " "
 " ¹²⁶ *Grindelia integrifolia* Comp Y 2 salt marsh
 " ¹²⁷ *Chamaecrista* ~~*lychnis*~~ W 5 dry hill side
 " ¹²⁸ *Fedum spathulifolium* Filices Y brackish marsh

Aug 25 ¹²⁸ *Fedum spathulifolium* Filices Y brackish marsh

- Sept 2¹²⁹ *Euranta umbrosa* Convolvulac. V on *Salicornia*
 130 *Mulgedium leucophorum* Compositae B sandy hills
 131 *Triglochin maritima* L. ~~Chenopod~~ Gr salt marsh
 132 *Chenopodium album* " " 4 ft sand
 133 " " var " " 1 ft. " "
 134 *Salicornia herbacea* " " 1" salt marsh
 135 *Rumex Persicariae* Polygonae " 3" sand
 136 *Epilobium angustifolium* Utricularia P^t woods &
 137 *Oenothera carmentosa* Umbellif. W^t wet grounds
 138 *Trifolium procumbens* Leguminosae V sand Intert.
 139 *Floukaya Peplodes* Caryophyll. P " beach
 140 *Polygonum Paronychia* Polyg. Pk " prairie
 141 *Chenopodium album* Chenopod Gr " " "
 142 *Aster Douglasii* ~~Compositae~~ ^{integ. folia} " " "
 143 *Antennaria margaritacea* " W " "
 144 *Polygonum falcatum* (vulgare) dead logs &
 145 *Solidago confertiflora* Compositae Sandy prairie
 146 *Aster Douglasii* " Bp. " "
 147 *Paronychia ramosissima* Caryoph. Gr. " "
 148 *Archangelica peregrina* Umbellif. W^t swamps
 149 *Franseria lehanifera* ~~Compositae~~ ^{Chenopod} Gr. sand shore
 150 *Moradella adnata* Labiatae B. P. prairie
 151 *Athysa umbellata*? Boragin. Rose sand beach
 152 *Macrochloa ~~laevigata~~* Compositae V " prairie
 153 *Oxyria ~~acutifolia~~* Ericaceae fruit along water
 154 *Antennaria* ¹⁵⁵ *Polygonum* ¹⁵⁶ *Chenopod*

- Sep 12¹⁵³ *Spiranthes cernua* Orchidaceae W. sandy prairie
 154 *Veronica* Scrophul W. " "
 155 *Gymnocarpus dioicum* Caprifolia Pk " woods
 156 *Polygonum Persicaria* Polygonae " 1 ft. shore
 157 *Gnaphalium ~~carissae~~* Compositae fleshy salt marsh
 158 *Gnaphalium purpureum* " V showing sand
 Oct 5¹⁵⁹ *Solanum nigrum* Solanaceae W sandy (Intert?)
 160 *Ranunculus reptans* Ranuncul. V brackish marsh
 161 *Gilia tricolor* Polemoniaceae W P garden
 162 *Gnaphalium* Gramineae sandy field
 163 *Coriaria* Fisch. Umbellif. W. sand P. marsh
 Nov 10¹⁶⁴ *Oenothera biennis* Onagraceae sandy prairie
 165 *Bidens cernua* Compositae V. in marsh
 166 *Myrica* Myricaceae? " prairie
 167 *Vaccinium macrocarpum* Ericaceae W. brackish marsh
 168 *Stellaria borealis* Caryoph. W. sandy Pk
 169 *Stellaria borealis* Caryoph. W. sandy Pk
 170 *Stellaria borealis* Caryoph. W. sandy Pk
 171 *Stellaria borealis* Caryoph. W. sandy Pk
 172 *Stellaria borealis* Caryoph. W. sandy Pk
 173 *Stellaria borealis* Caryoph. W. sandy Pk
 174 *Stellaria borealis* Caryoph. W. sandy Pk
 175 *Stellaria borealis* Caryoph. W. sandy Pk
 176 *Stellaria borealis* Caryoph. W. sandy Pk
 177 *Stellaria borealis* Caryoph. W. sandy Pk
 178 *Stellaria borealis* Caryoph. W. sandy Pk
 179 *Stellaria borealis* Caryoph. W. sandy Pk
 180 *Stellaria borealis* Caryoph. W. sandy Pk
 181 *Stellaria borealis* Caryoph. W. sandy Pk
 182 *Stellaria borealis* Caryoph. W. sandy Pk
 183 *Stellaria borealis* Caryoph. W. sandy Pk
 184 *Stellaria borealis* Caryoph. W. sandy Pk
 185 *Stellaria borealis* Caryoph. W. sandy Pk
 186 *Stellaria borealis* Caryoph. W. sandy Pk
 187 *Stellaria borealis* Caryoph. W. sandy Pk
 188 *Stellaria borealis* Caryoph. W. sandy Pk
 189 *Stellaria borealis* Caryoph. W. sandy Pk
 190 *Stellaria borealis* Caryoph. W. sandy Pk

138

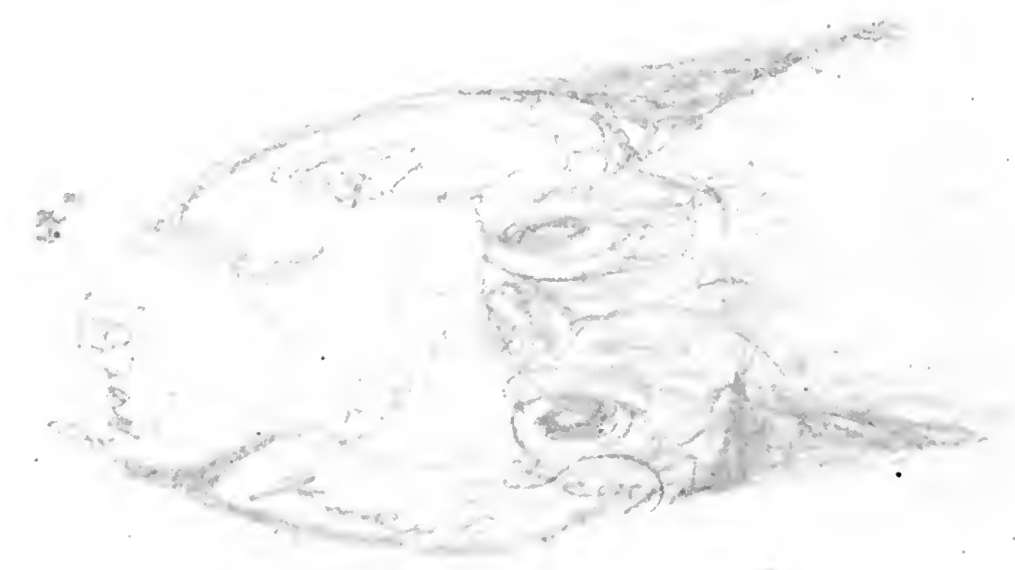
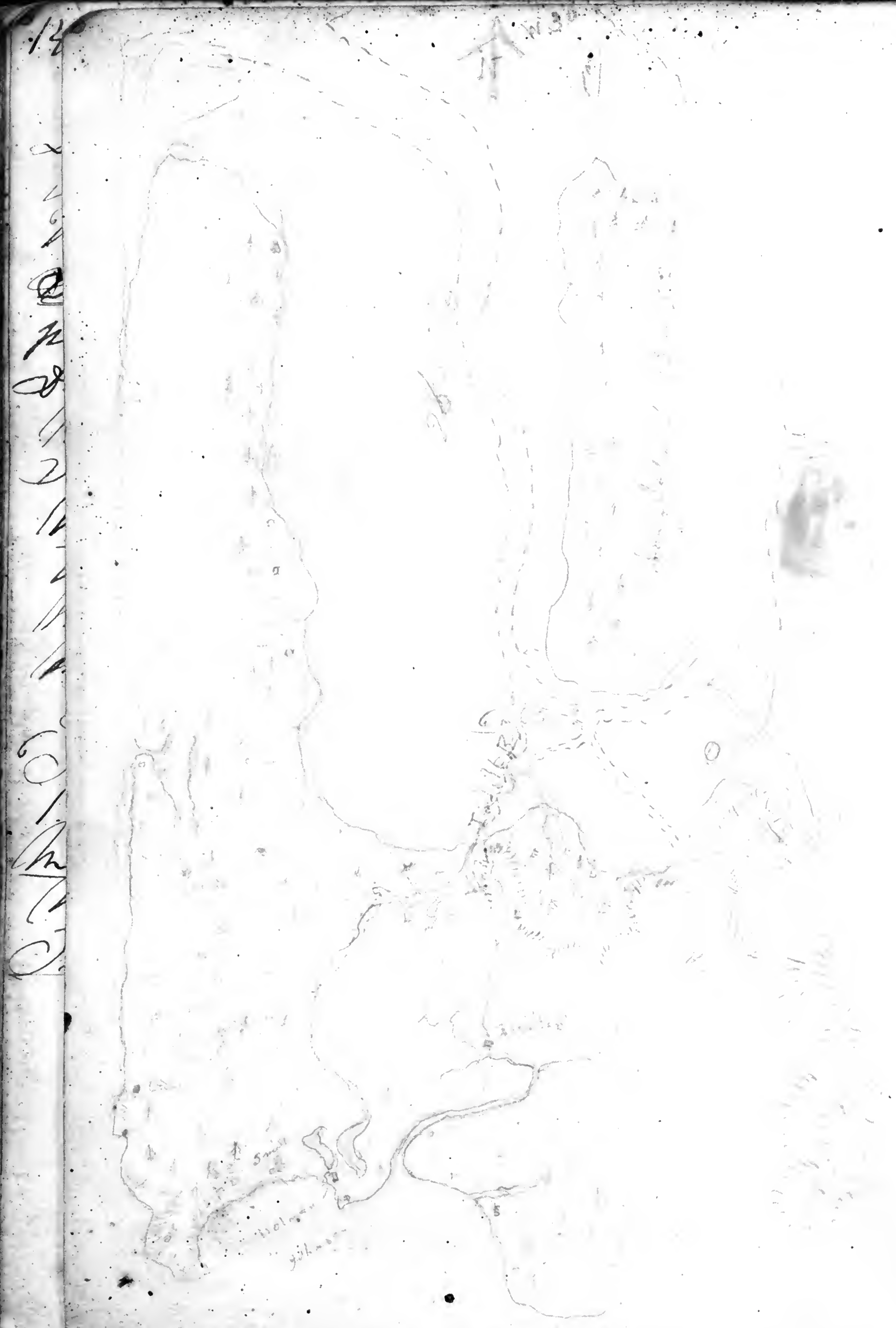
Common preserved in salt brine of the
Largest males above grayish blue
with few spots - sides pale salmon - red
belly pale & white fins tinged with
yellow & black towards tips. Opercula
& flanks with silver. Soft bottom 184
Smaller males & females back dark
dusky olive, spots black belly silver
white (w/ red tints) Check silver
Coloring seems to vary with age & size
see note on specimen 184

Outline of daily notes for travelling

Distance travelled & country traversed -
its General Character, Scenery & products
Vegetable. Mineral, waters, Geology -
~~Inhabitants~~ tribes & power castes &
peculiarities anatomical & otherwise -
Local habitations subsistence subsistence
Mode of life. disposition. religions. history
Instruments & mode of warfare
Natural History - 1st Geology -
Rocks, soils, & their connection with plants
Mineral & other springs. temperature of air.
Metals & fossils Volcanic appearances Coal
Zoology / Mammals? (Smith & Beth. & Rept. & Birds
Insects, Shells, & Botany, & Mineralogy
Size, habits, changes, uses &c
Mythology - Geography Lat. & Long.
Medical notes health of party & country
Interesting incidents - Addenda



31.





MAP OF THE OREGON TERRITORY FROM THE BEST AUTHORITIES. 1849

NOTE
All the region along the base of the Rocky Mountains is generally diversified by gentle hills and fertile plains, it is watered by innumerable small rivers and lakes, all kinds of animals abound. This region extends for miles to the Eastward and is the favorite abode of the Blackfoot Indians.

COLUMBIA RIVER
REDUCED FROM A SURVEY
MADE BY THE
U. S. EX. EX.
1841
Scale of 30 Miles

$15\frac{1}{4}$
 $15\frac{2}{3}$
 $13\frac{3}{4}$
7
8
 $9\frac{1}{2}$
 $19\frac{1}{2}$
 $16\frac{1}{2}$
 $10\frac{3}{4}$
21
20

Cal. to 9/6 182 $\frac{1}{2}$ miles
 Cal. to 9/6 90
252 $\frac{1}{2}$

